



innovation hub

AMCHP | *Explore. Build. Share.*



MCH Innovations Database Practice Summary & Implementation Guidance

ASD-PRIME

ASD in Primary Care Education (ASD-PRIME) is designed to address pragmatic barriers surrounding primary care providers' access to training and supports for ASD by utilizing open-access tools and online modules targeting enhanced screening, diagnostic, and post-diagnostic care coordination protocols within the context of primary care and other early care settings.



Location

Nashville, Tennessee



Topic Area

Family/Youth Engagement,
Primary/Preventative Care



Setting

Clinical/Community



Population Focus

CYSHCN, Families,
Health Care Providers



NPM

NPM 6: Developmental
Screening/NPM 11: Medical
Home



Date Added

January 2022

Contact Information

Jeffrey Hine, Ph.D., BCBA, Vanderbilt Kennedy Center's Treatment and Research Institute for Autism Spectrum Disorders, 615-875-9525, Jeffrey.hine@vumc.org

Section 1: Practice Summary

PRACTICE DESCRIPTION

Pediatric primary care providers (PCPs) are most families' initial points of contact for first discussions about possible autism spectrum disorder (ASD), making crucial decisions about developmental concerns and referral during the first three years of life. Ideally, all children would be screened at 18- and 24-month well visits and those deemed at risk would receive prompt evaluations and appropriate services. However, for a variety of reasons (e.g., lack of PCP training/comfort, time/financial barriers), many children are still not screened at all, wait times for diagnostic assessment are tremendous, the average age of diagnosis remains above 4 years of age, and post-diagnostic care coordination is often unclear and variable. These factors disproportionately affect racially/ethnically/linguistically diverse, geographically isolated, impoverished, and under-resourced populations. To decrease age of ASD diagnosis, enable earlier intervention, build inclusive medical homes, and address existing gaps in equitable care, we must train a primary care workforce to better act on ASD concerns in toddlers and coordinate post-diagnostic care within the primary care setting.

ASD-PRIME emphasizes training in within-practice diagnostic triage and actionable frameworks for follow-up care by providing 1) access to an online suite of practice supports made available during training and beyond; 2) training in diagnostic triage tools for use within primary care; and 3) electronic health record (EHR) supported decision-making tools for care navigation that guide systematic follow-up with families in the post-diagnostic period. Through this combination of intervention components, we hope to accomplish increased knowledge and self-efficacy for PCPs, create a system wherein these competencies and practice behaviors become the expected standard of care for PCPs, and that these changes will directly improve families' access to timely early intervention.

Our team has completed several studies assessing the feasibility, accuracy, and impact of community primary care training programs. This includes teaching providers to administer a brief interactive assessment, the Screening Tool for Autism in Toddlers (STAT), via an intensive in-person training that has yielded high levels of diagnostic accuracy, practice change, and increased numbers of children enrolled in early intervention. Despite its substantial impact, this model relies on expert-led, resource intensive, in-person trainings. Additionally, within our pilot work, providers were concerned that fluency with a stand-alone tool like the STAT was not sufficient for providing comprehensive care. Thus, ASD-PRIME was created to overcome some of those resource limitations and emphasizes 1) asynchronous learning opportunities keyed to best-practice recommendations; 2) the ability to link this knowledge directly to practice change through EHR-supported clinical decision-making guides; and 3) a system that allows long-term open access to support, inclusive of supports for care of racially/linguistically/culturally diverse patients.

CORE COMPONENTS & PRACTICE ACTIVITIES



The ASD-PRIME model is designed to utilize freely available, open-access tools and supports (many embedded within EHR structures) to address pragmatic barriers to long-term use. All components of this training are designed to operate in concert with existing learning rotations as part of medical training (e.g., residents, nurse practitioner students) or as part of a self-paced quality improvement practice. Components include 1) a set of brief online procedural learning activities; 2) Brief clinical care guides that can be viewed online, printed, or accessed via the EHR; and 3) recommendations for hands-on, supervised practice opportunities and feedback. Importantly, each of these components can be easily modified to reflect the resources of different institutions/sites/learning groups to increase portability.

Core Components & Practice Activities		
Core Component	Activities	Operational Details
Online Training Modules	Complete interactive online training modules	Learners will complete asynchronous learning modules reviewing 1) baseline competencies in ASD identification and screening, 2) training in interactive and observational assessment, 3) action steps and universal resources to deploy in response to concerns, and 4) strategies and principles of culturally and linguistically competent ASD care
Clinical Care Guides and EHR Templates	Knowledge is linked to practice behavior by providing support guides and EHR templates	Brief clinical care guides (adapted from AAP/CDC best practice guidelines) that can be viewed online, printed, or accessed via the EHR will facilitate decision-making related to ASD and are also intended to assist with care coordination within practice. This includes templates for post-diagnostic follow-up visits embedded within the EHR and clinical note templates across various categories of recommendations (e.g., early intervention services,



		<p>supplemental therapies, in-home supports, parent resources). Each of these clinical care guides comes with associated printable resources for caregivers that can auto-populate to the after-visit summary (AVS). All caregiver supports are also available in Spanish.</p>
<p>Hands-on Learning Opportunities and Supervision</p>	<p>Embed learned skills into practice as appropriate</p>	<p>The ASD-PRIME model provides recommendations for hands-on practice as well as fidelity check worksheets for learners to self-evaluate or to facilitate supervisory consultation. This can include supervised experiences as part of a medical rotation, in-person observation, or tele-consultation by a trained professional. Hands-on experiences tie in the above-referenced clinical care guides and encompass 1) structured observation and documentation of ASD concerns, 2) a guided clinical parent interview, 3) provision of diagnostic feedback and care recommendations to family, and 4) communication back to referring providers and care coordination.</p>

HEALTH EQUITY

The standard of care in many community pediatric settings is to screen for risk and then refer children to tertiary diagnostic centers with lengthy waitlists. Ideally, children identified as at-risk would receive prompt specialist diagnostic evaluation. In reality, such experts are not available in many locations. Meanwhile, without diagnostic confirmation, children often receive low levels of non-specific services. Unfortunately, even when appointments are available, tertiary care centers may not successfully engage with families that are multi-stressed, rural, or culturally/linguistically/racially-diverse. Primary care providers are much less likely to screen for ASD at all if they are worried that their patients will not be able to access diagnostic and intervention services. These struggles highlight the need for novel systems of care and approaches to ASD screening, evaluation, and diagnostic decision-making



that advance early detection within primary care, thereby expediting intervention for these vulnerable groups. Specifically, providing the current and future primary care workforce with focal training in innovative ASD identification tools and action steps as part of novel medical home structures could dramatically increase providers' capacity to engage more young children in prompt early assessment and meaningful, evidence-based intervention.

EVIDENCE OF EFFECTIVENESS

Over the past decade, our team completed several studies assessing the feasibility, accuracy, and impact of training community PCPs in how to use a standardized assessment tool (the STAT) and decision-making framework for the within-practice diagnosis of ASD. Using this approach, which includes a combination of in-person and online training, we trained community PCPs in Tennessee to very high levels of ASD diagnostic agreement with expert clinicians (93%) and sustained practice change. We then collaborated with a state system of early identification and provided this training to early intervention and medical providers across their state. Embedding within-practice risk assessment, in conjunction with modified state early intervention eligibility guidelines, resulted in a fivefold increase in toddlers enrolling in evidence-based treatment, with very low errors in diagnostic classification (only 2.5% false positives). In another collaboration with pediatric providers in a different state, our team trained pediatric care leaders in the STAT model; this team then developed a statewide early autism evaluation hub system, resulting in the largest published report of a primary care supported system for early ASD screening and diagnosis.

In our current work, we emphasize open-access tools/trainings. We conducted a feasibility study of a training package similar to ASD-PRIME across a 16-month period at our medical center. Pediatric residents completed the e-learning modules, then were given opportunities to directly practice related skills as part of toddler ASD evaluations during their Developmental-Behavioral Pediatric (DBP) rotations or embedded within their continuity clinic. Of the 63 participating residents, 95% completed the enhanced learning requirements (modules and practice repetitions), and comparison of pre- to post-test ratings showed significant increases in comfort level in ASD best practice behaviors. 81% of residents reported increased comfort with making a formal ASD diagnosis in young children, with 76% of residents reporting increased comfort in their ability to provide primary care to children with ASD. Post-training, the percent of residents who found it appropriate for a PCP to diagnose ASD increased from 40% to 79%. Thus, we learned that linking asynchronous and hands-on training can boost resident perceptions of the importance of training in ASD as well as their own self-efficacy in providing primary care to children with ASD.

Section 2: Implementation Guidance

COLLABORATORS AND PARTNERS



Practice Collaborators and Partners

Partner/Collaborator	How are they involved in decision-making throughout practice processes?	Does this stakeholder have lived experience/come from a community impacted by the practice?
VUMC Pediatricians, Psychologists	Experts across our department are involved in the design and refinement of ASD-PRIME	Our providers provide diagnostic evaluations for families of children demonstrating characteristics of autism.
VUMC Residents and NP students	Provide ongoing feedback as to the content of the modules and feasibility of practice change	Learners provide care and information to parents of children with developmental differences.
Community PCPs	Provide ongoing feedback as to the content of the modules and feasibility of practice change	Learners provide care and information to parents of children with developmental differences.
VKC TRIAD Educational Consultants	Educational consultants coordinate the online learning platform development for ASD-PRIME	No
Caregivers of children with autism or developmental concerns	Caregivers are asked to be an active participant in the assessment of their child by providing developmental history and current concerns as well as	Caregivers are the primary care providers for the children receiving services from the program



facilitating key observations
during evaluation

REPLICATION

We have learned that although prior iterations of ASD-PRIME were impactful, its previous version was limited by its reliance on copyrighted learning modules not designed for open-access or long-term, wide-ranging support. Thus, we have made multiple enhancements to be able to bridge to a broader range of providers and learners. ASD-PRIME modules and supports also have now been adapted for use by external providers and other residency training programs.

Our team at VUMC has also created a Maintenance of Certification (MOC Part 4) Quality Improvement program to better monitor and track the impact of this intervention internally and with community pediatric partners. We meet monthly and review data from providers related to completed visits, practice behavior change, and survey feedback.

INTERNAL CAPACITY

The least resource-intensive way to engage with the ASD-PRIME model is for individual providers to review the modules and practice supports. In order to fluently integrate new skills into current practice, individual providers will need to assess their current background knowledge and experience with early identification/care of ASD, current clinic flow/volume and billing structures, and need for ongoing supervision or expert consultation. The modules and practice supports can be a stand-alone learning program, but sustained practice change will depend on the above factors.

To embed ASD-PRIME supports within a residency training program (or other primary care provider training program), we recommend a number of prerequisite supports. First, previous models have been most successfully embedded into the required 4-week DBP rotation. Learners would first be required to review modules and then immediately get supported hands-on practice with DBP providers during their rotations (i.e., during toddler ASD evaluations). Learners would then be encouraged to use practice supports within continuity or training clinic settings. Given the ASD-PRIME is a suite of tools and resources, programs can select which portions of the ASD-PRIME model are most feasible to embed within their program. For successful implementation of ASD-PRIME components, we recommended collaborative support from residency training leadership, DBP rotation leadership, and clinical leadership. DBP rotation lead should allow residents an appropriate amount of admin time to complete targeted modules (e.g., 2-3 hours) before hands-on practice. DBP rotation lead should also work DBP providers to allow appropriate access to hands-on learning opportunities during their rotation. Continued learning opportunities may be available by partnering with continuity clinic leadership to assess feasibility of embedding practice supports and providing appropriate supervision for new practice behaviors. Within continuity or non-specialist training clinics, we found that it was beneficial to identify a clinical champion or embedded ASD-specialist to provide ongoing support to learners.



PRACTICE TIMELINE

For more information on this practice's timeline and specific practice activities, please contact Dr. Jeff Hine directly at jeffrey.hine@vumc.org.

PRACTICE COST

ASD-PRIME was designed to be open-access, hopefully reducing cost burden for replication sites. Modules are all online, and practice supports are all able to be downloaded for free. Other associated costs might include evaluation materials/toys as needed. For more information on this practice's startup costs and budgets, please contact Dr. Jeff Hine directly at jeffrey.hine@vumc.org.

LESSONS LEARNED

An important lesson we learned involved how to best engage busy providers who have endless responsibilities within busy clinics. Our team has been working hard to balance the required intensity of training to the typical workflow of a primary care provider. We learned that rather than offer our model as a "one-size-fits-all" approach, we instead want to be able to offer both families and providers choices and options when it comes to screening and diagnostic triage of young children at risk for ASD. We have learned to work closely with our PCP stakeholder team to keep ASD-PRIME as an adaptive and dynamic system that can offer a "suite" of tools to a range of providers in varied settings.

Another challenge that we have encountered is balancing the content of the modules to the targeted learners, given that range in experience and comfort level for practices is broad. We have been careful to not create an overtaxing program where content is too heavy for busy providers. We designed the modules to present fundamental knowledge required for PCPs to be able to help families from first concern to post-diagnosis; however, have added a library of "entry-level" content for less-experienced learners. Also, we have been clear with our expectations for the reach of the modules by themselves, intending the modules be used as part of a larger training program that entails hands-on practice, embedded clinical supports, and appropriate supervision and fidelity checks.

This practice is being developed and refined in an ongoing and iterative way. We intend to continue to develop clearer links from module content to hands-on practice opportunities; however, during COVID-19, supervision and live practice for learners has been difficult to implement. Thus, our team has started to design a larger set of video examples and vignettes to be added to the online modules as well as work through tele-consultation models to provide live (but remote) supervision and feedback.



NEXT STEPS

We have recently received multiple requests for the ASD-PRIME modules and training program to be shared with other institutions to be embedded within their learning programs. This has included other entities charged with training practicing PCPs in their state as well as resident training programs. We intend to work in collaboration with these external groups to adapt modules as needed for a variety of settings, with the ultimate goal of creating a toolkit for dissemination.

One future modification includes introduction of a larger set of observational tools that can be embedded within primary care settings. As stated above, some of the tools reviewed in ASD-PRIME are proprietary, thus, we intend to ensure a larger set of open-access tools to increase use/dissemination.

We also intend to better measure the impact of this model on family engagement with post-diagnostic systems of care. Our ultimate goal is to train the pediatric workforce to engage in competent ASD-related practices that improve access to timely diagnosis and intervention services for families, especially those from communities that have been traditionally marginalized.



RESOURCES PROVIDED

- Hine JF, Allin J, Allman A, et al. Increasing Access to Autism Spectrum Disorder Diagnostic Consultation in Rural and Underserved Communities: Streamlined Evaluation Within Primary Care. *J Dev Behav Pediatr.* 2020;41(1):16-22.
- Hine JF, Herrington CG, Rothman AM, et al. Embedding Autism Spectrum Disorder Diagnosis Within the Medical Home: Decreasing Wait Times Through Streamlined Assessment. *J Autism Dev Disord.* 2018.
- Hine JF, Wagner L, Goode R, Rodrigues V, Taylor JL, Weitlauf A, Warren ZE. Enhancing developmental behavioral pediatric rotations by teaching residents how to evaluate autism in primary care. *Autism.*:1362361320984313.
- Keehn RM, Ciccarelli M, Szczepaniak D, Tomlin A, Lock T, Swigonski N. A statewide tiered system for screening and diagnosis of autism spectrum disorder. *Pediatrics.* 2020 Aug 1;146(2).
- Rotholz, D. A., Kinsman, A. M., Lacy, K. K. & Charles, J. Improving early identification and intervention for children at risk for autism spectrum disorder. *Pediatrics* e20161061 (2017).
- Swanson AR, Warren ZE, Stone WL, Vehorn AC, Dohrmann E, Humberd Q. The diagnosis of autism in community pediatric settings: does advanced training facilitate practice change? *Autism.* 2014;18(5):555-561
- Warren Z, Stone W, Humberd Q. A training model for the diagnosis of autism in community pediatric practice. *J Dev Behav Pediatr.* 2009;30(5):442-446

APPENDIX

- N/A.

