

A Primary Care-Based Approach to Improving Kindergarten Readiness

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abstract

OBJECTIVE: This quality-improvement project aimed to develop personalized literacy plans (PLPs) during the 3- and 4-year preventive care visit to promote kindergarten readiness in busy primary care settings.

METHODS: Two clinics serving primarily Medicaid-eligible patients hired staff members with training in early childhood education to serve as kindergarten readiness coordinators (KRCs). KRCs assessed child literacy using a standardized measure, The Reading House (TRH), or if there was a language barrier, by asking the caregiver about the child's literacy skills. The KRCs provided a PLP, including parental guidance, home literacy kits, and referrals to community programs and services. All children, regardless of literacy skill, were referred to an early literacy program (eg, preschool, home kindergarten readiness program) if not already connected. The goal was that at least 65% of patients would be given a PLP by a KRC. Linkages to services were tracked with phone follow-up 1 and 3 months after referral.

RESULTS: After 12 months, the centerline for the proportion of eligible 3- and 4-year-old children receiving a PLP was 64%. For the 24-month evaluation period, 85% (n = 1076) of children with a PLP were referred to an early education program, of whom 43% (n = 463) had confirmed linkage by 3 months.

CONCLUSION: By the end of this project, most children had a PLP and nearly half were confirmed to be linked to an early education program. Future work is needed to understand the impact of assessment and referral on kindergarten readiness, linkage to early education, and sustainability.

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INTRODUCTION

Being ready for kindergarten, with a foundation in early literacy skills, is a strong predictor of long-term literacy and vocational and health outcomes.^{1–3} In Ohio, children receive a standardized Kindergarten Readiness Assessment (KRA) test at the time of kindergarten entry. Less than 40% of those tested have adequate readiness, with disparities by race, ethnicity, income, and geography (eg, rural vs suburban).^{4–6}

We chose to focus on improving early literacy skills for 3- and 4-year-old children as an initial step to improved kindergarten readiness, as part of the Franklin County Pediatric Vital Signs Project. The Pediatric Vital Sign goal for kindergarten readiness is to increase the percentage of kindergartners who pass Ohio's KRA within Franklin County from a baseline of 41% in 2020 to 75% by 2030. Since the original baseline measure, we have seen a significant decrease in the overall pass rate for the KRA given the effects of the COVID-19 pandemic and loss of formalized early education during that time. In the 2023–2024 academic year, only 31% of kindergartners entering Columbus City Schools (the largest school district in Franklin County) demonstrated proficiency on the KRA,⁷ underscoring the need for continued focus on this metric with some tangible interventions. Primary care clinics are a natural focus for intervention given their frequent, repeated visits with children prior to starting kindergarten and the trusting relationship between families and clinic staff. The specific program design and choice of screening tool was developed from stakeholder meetings that involved primary care leadership, clinic staff, local early childhood experts from Future Ready Five, and national pediatric experts in early literacy from Cincinnati Children's Hospital and the Ohio State University Crane Center for Early Childhood Research and Policy. Given the complex current primary care preventive recommendations, we chose to implement an intervention that was not clinician-centric but instead based on additional support staff. Two kindergarten readiness coordinators (KRCs) assessed patients during 3- and 4-year-old preventive visits with the goal of helping parents understand their child's current literacy skills and what skills are expected at the start of kindergarten. Funding for the KRCs was provided by Nationwide Children's Hospital and a local early education nonprofit, Future Ready Five. The 3- and 4-year-old visit was chosen because these children are eligible for high quality preschool and several other early development resources in our community. Model design included the KRCs working with families to develop personalized literacy plans (PLPs), inclusive of home activities and materials, local community resources, and referrals for early education services. Follow-up with families occurred to monitor linkage after referral was made. Linkage is defined as successful enrollment in the recommended program or service.

METHODS

This quality-improvement project was conducted in 2 primary care clinics in Franklin County, affiliated with the Nationwide Children's Hospital Primary Care Network, between January 2022 and January 2024. These clinics provide about 1250 preventive care visits for 3- and 4-year-old children annually. Of these children, approximately 80% are Medicaid enrolled and 30% of families have a preferred language other than English. Patients have general developmental screening with the Survey of Well-being of Young Children at well child visits but do not have a formal assessment of early literacy skills.

The aim of this project was to provide a PLP to at least 65% of 3- and 4-year-old children during their preventive care visit in the first 2 years of this project, from a baseline of 0%. Upon initiation of the intervention, interviews with clinical staff, the operations team, and observations of patient interactions led to the identification of barriers in efficiency of the literacy assessment in the primary care setting. As a result, an intervention that could operate in support of, but in parallel to, the primary care clinician was developed. Components of the intervention developed from our key driver diagram (Figure 1) include the KRCs, a standardized literacy assessment, material for the PLP, lists of community resources for referral, clinic integration, and care coordination.

Kindergarten Readiness Coordinators

Two clinics were selected based on the location of pediatrician literacy champions and perceived need to improve kindergarten readiness based on historical KRA scores for those geographic areas. Two KRCs were hired, both with an undergraduate degree and work experience in early childhood education and a certification in early intervention. The KRCs had a 1-month onboarding process during which they were trained in the flow of an outpatient pediatric clinic and the components of preventive care. They learned how to assess literacy, document findings in the electronic medical record, steps to prepare a PLP, process for tracking referrals, and strategies to maintain a list of community resources and develop relationships with community partners. Prior to working independently, the KRCs were observed 5 times by the pediatrician as they assessed literacy and provided the PLP.

Literacy Assessment

The Reading House (TRH)⁸ is a validated tool for early literacy assessment that is based on observing how a child interacts with a specially designed board book. Screening typically takes less than 10 minutes and assesses concepts of print, alphabet knowledge, letter-sound knowledge, phonological awareness (rhyming, alliteration, blending), expressive vocabulary and emergent writing. Because TRH is only available in English, the KRCs could optionally

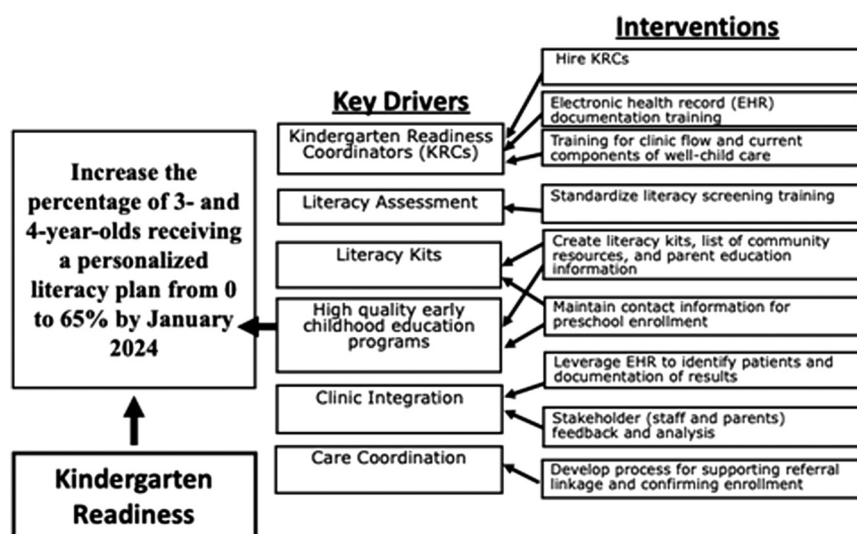


FIGURE 1.
Key driver diagram.

observe the child and ask caregivers questions to assess the same literacy skills using an interpreter. The goal of these assessments was to demonstrate to families their child's current literacy skills and what skills are expected at the start of kindergarten. This interaction with caregivers helped to personalize the home activities to promote those skills. However, all children, regardless of their literacy skills, were referred to a quality early education program if not already connected.

The Personalized Literacy Plan

The KRC would lead the family through a discussion based on findings from TRH and/or interactions with the family to highlight their child's current skills and discuss needed skills to target prior to kindergarten. They would work with the family to develop the PLP. The literacy plan always included parent education on early literacy skills expected prior to kindergarten with recommended home activities to support learning those skills. The PLP also included a literacy kit, including magnetic letters, activity and practice books, scissors, toy clay, and educational learning links.

Referrals

Regardless of the child's current literacy skill level, the KRCs would supplement the learning plan with early education resources, such as programs at local libraries, virtual resources, and relevant community events. Targeted referrals were placed for children who demonstrated minimal literacy skills alongside additional concerns for speech and/or global developmental delay. These targeted referrals, such as speech therapy, developmental clinic, or autism diagnostic clinic, were placed in coordination with the primary care provider. Additionally, the KRCs worked to

connect every child to a quality early childhood program (ie, based on a standard curriculum and quality rating and improvement system administered by the Ohio Department of Children and Youth) if not already connected. These programs included preschool, special needs preschool, in-home kindergarten readiness programs, and virtual kindergarten readiness programs. If specific in-person programs were full, the KRC identified an alternate program that could include an in-home or virtual option. The KRCs worked to identify all available options within each community to have a depth and breadth of program options. The KRCs documented referrals made for each family and tracked linkages, defined as successful enrollment in the recommended program or service, 1- and 3-month after the visit.

Outcome Measures

The main outcome measure was the proportion of children attending the clinic for 3- and 4-year-old preventive care visits who received a PLP. Data were tracked weekly and discussed in weekly team meetings. Secondary outcome measures included percentage of 3- and 4-year-olds screened with TRH, and percent referred to an early literacy program, and if referred, had linkage confirmed within 3 months.

RESULTS

The first clinic KRC finished training in January 2022 and the second KRC in April 2022. The statistical process control chart (Figure 2) illustrates the proportion of children seen for preventive care who received a PLP after the KRC started in the clinic. The immediate centerline was 36%, increasing to 64% after clinic flow was improved by adding

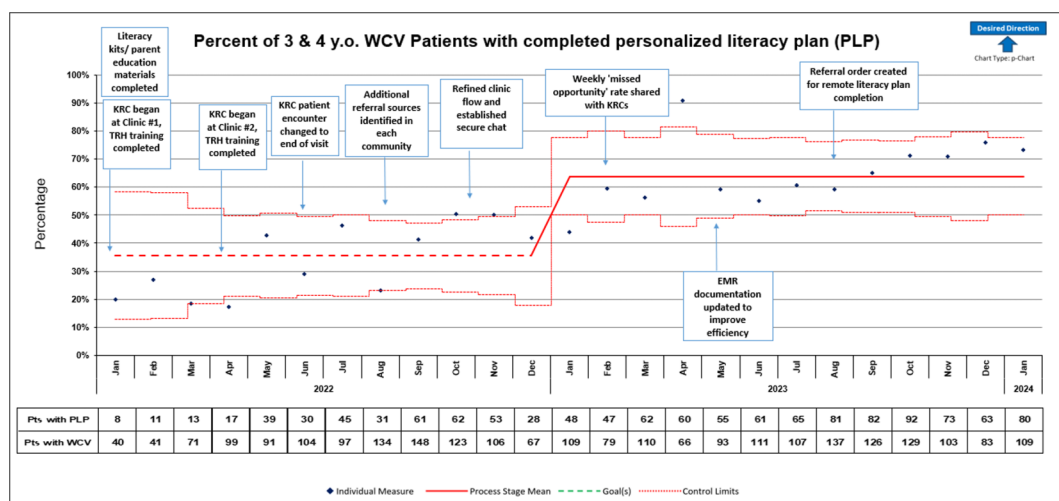


FIGURE 2. Statistical process control chart. Abbreviations: EHR, electronic health record; KRC, Kindergarten Readiness Coordinator; TRH, The Reading House.

a secure chat process, allowing for improved communication between the KRC and the medical team. Initially, KRC activities were completed directly after rooming the patient, delaying the provider visits and disrupting clinic flow. The KRC activities were moved to the end of the visit, leading to missed opportunities if the patient had just received vaccinations or if the parent did not have additional time. The KRC activities were ultimately standardized to occur directly after the provider left the room but prior to any other clinic services.

Over the full period of the project, there were 2483 3- and 4-year-old preventive care visits, with 51% receiving a PLP, and more than 60% having a plan by the second year of the project. Some (15%) of children were already connected to a quality early education program, leading to the referral of 85% to an in-person preschool or home kindergarten readiness program. These referrals included preschool programs (31%) or special needs preschool programs (16%), in-home kindergarten readiness programs (42%), and virtual kindergarten readiness programs (11%). At the 3-month phone follow-up, the confirmed linkage rate was 43% (463 of 1076). Over time, the KRCs also helped the other clinicians make targeted referrals for children with developmental delays, including speech therapy referrals and autism diagnosis and treatment referrals.

DISCUSSION

Improving kindergarten readiness can have a profound long-term impact.¹⁻³ Although the pediatric medical home offers a unique opportunity to help families engage in literacy-promoting activities and referral to educational programs, little is known about how to do this within the limited time available during preventive care visits.

The innovation of integrating KRCs into the care team led to PLPs and successful referrals to educational programs. The ultimate Pediatric Vital Sign goal of improvement in KRA scores at kindergarten entry will not be available for this specific patient population for an additional 2 years. Additionally, it is important to note that literacy is only one component of kindergarten readiness. This approach may not be feasible given the cost of hiring new staff specifically for the purpose of addressing early childhood literacy. Future work is needed to assess whether existing clinic staff can complete the activities if the intervention proves to be effective. A single KRC within each clinic was not enough to ensure that all 3- and 4-year-old preventive visits received the intervention. About 20% of opportunities were missed because the KRC was not available. Another important challenge is maintaining a list of quality referral sites to promote early literacy and developing strong relationships with those community organizations. Not all communities have access to these programs and these programs often have limited enrollment. Any approach for broad promotion will need to be tied with available literacy activities in the community to ensure access. Work is also needed regarding effective data sharing between these educational programs and the medical home regarding availability, how to refer, and whether there was linkage after referral.

If our longitudinal analysis demonstrates that promotion of early literacy skills and referral to quality early education programs within the medical home improves kindergarten readiness, we believe that there is a great opportunity to expand routine preventive care. One challenge will be how to fund these efforts. Although improving literacy has long-term benefits to the individual and to society, there is no current accepted billing structure for these services.

This underscores the need to reinvent not only how the medical home operates but how it is financed.

ABBREVIATIONS

KRA: Kindergarten Readiness Assessment
KRC: Kindergarten Readiness Coordinator
PLP: Personalized Literacy Plan
TRH: The Reading House

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