



Evaluating Community Approaches to Preventing or Mitigating Toxic Stress

## Research Brief 3

### Clinic Capacity to Address Pediatric Healthcare Quality using Electronic Health Records

July 2019

*This brief, third in a series, provides an assessment of the technical capabilities of participating clinics to support Bright Futures recommendations and engage in quality improvement and evaluation based on self-report assessments of EHR capabilities.*



#### Overview

Across the United States, pediatric practices have adopted preventive care guidance from the American Academy of Pediatrics (AAP) and engaged in quality improvement and evaluation efforts to promote delivery of high quality healthcare and positive health outcomes for infants and children.

Electronic health records (EHR) are key to successful implementation of many of these recommendations and initiatives. In the past, pediatric practices have relied on cumbersome paper medical records to track, deliver, and assess their services, making data-informed practice a strenuous challenge. With the adoption of EHRs, pediatric practices can now leverage these systems to serve multiple functions including: billing; quality reporting; tracking receipt of recommended preventive services; screenings and tests, and changes in patient outcomes related to new initiatives and uptake of best practice guidance.



**Bright Futures™**  
prevention and health promotion for infants,  
children, adolescents, and their families™

AAP's Bright Futures Guidelines provide evidence-based guidance<sup>1</sup> for pediatric primary care, including age-specific recommendations for preventive care screenings and well-child visits.<sup>2</sup> Bright Futures recommendations\* provide:

- Advice on adult and child screenings, assessments, physical examinations, and procedures
- Anticipatory guidance at each age from birth to 21 years old
- Many tools and resources for practices, communities, and states working to implement guideline-recommended care for their pediatric population
- Resources and tips for implementing Bright Futures in clinical practice<sup>1</sup> - which provides links to specific tools and resources, recommended quality improvement measures, and suggestions for organizing a practice to facilitate implementation of Bright Futures

*\*currently in its fourth edition (updated 2017)*

However, many factors limit the utility of this powerful tool, diminishing the potential impact clinics experience in using data to improve their practices. For example, clinics vary widely in technical capability, EHR specifications, and the availability of resources to analyze data. These limitations impact clinic ability to use their EHR to implement recommendations, such as Bright Futures, to support high quality healthcare and quality improvement needs. Despite challenges, many clinics have established procedures, practices, and personnel capacity necessary to maximize potential gain by leveraging EHR as a tool to reach beyond service delivery to service improvement.

With support from The JPB Foundation, Chapin Hall at the University of Chicago is conducting the *Evaluating Community Approaches to Preventing and Mitigating Toxic Stress* study. NORC at the University of Chicago is partnering with Chapin Hall to examine data from each clinic's EHR system to measure health care quality and utilization among study families. NORC asked clinics to complete a self-assessment about aspects of their EHR system related to collecting, tracking, and extracting data for the study. In this brief, we use these data to assess the technical capabilities of clinics to support Bright Futures recommendations and apply EHR as a tool for evaluation and quality improvement purposes. We posit that gathering these data for their patient population may help clinic personnel understand their readiness for initiatives like Bright Futures and highlight the challenges clinics face in leveraging data systems to support evidence-informed best practices.

### Methods and Data Sources

Data for this analysis are from two sources: an online survey self-assessment completed by clinics, and follow-up discussions held with each clinic to better understand aspects of their EHR. Importantly, we learned about Bright Futures implementation through a broader clinic survey that was centered on our goal of assessing capacity to engage in study-related data collection, rather than a survey about Bright Futures Guidelines specifically.

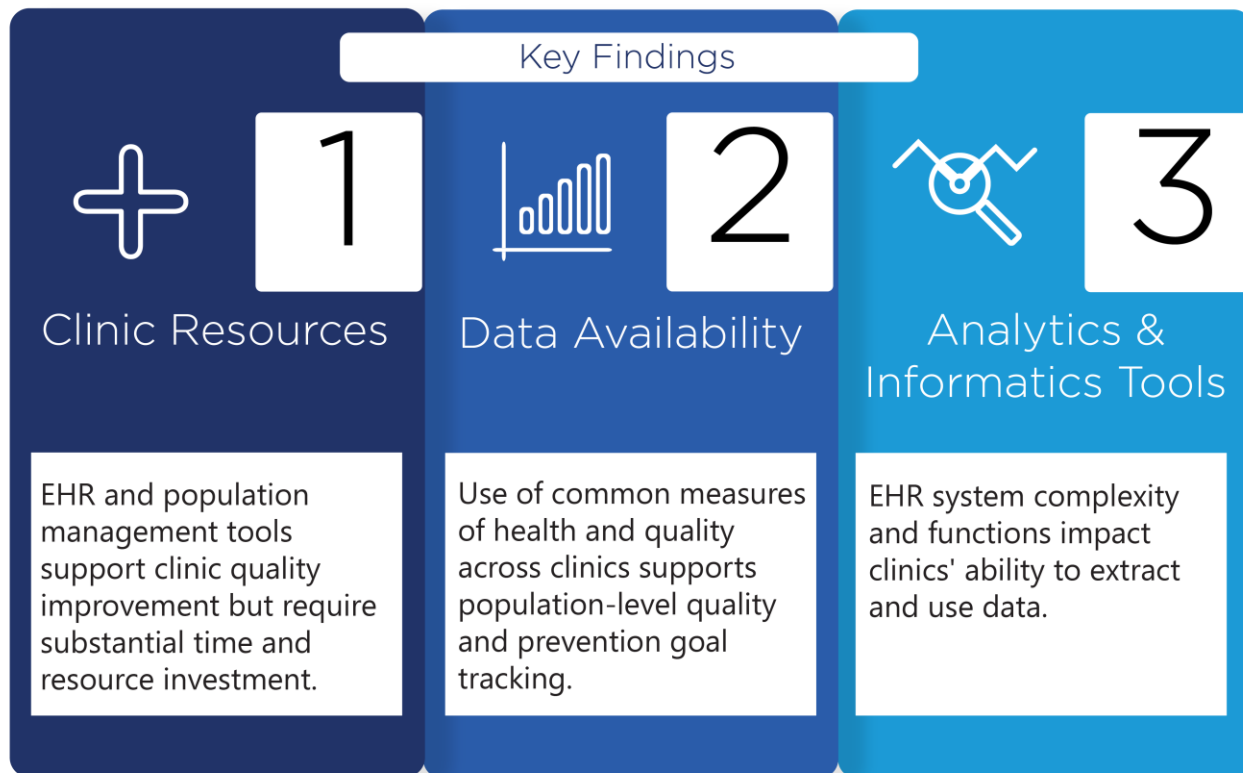
This brief, applies lessons learned through the assessment and conversations with a range of pediatric practices across the United States to illustrate readiness for and challenges to implementing guidance such as Bright Futures, as well as data-driven quality improvement and evaluation among pediatric practices. Others have developed more formal systems for evaluating readiness to implement Bright Futures<sup>1</sup> and clinics wishing to understand their readiness more fully are encouraged to consider using the tools recommended by the Bright Futures Training Intervention Project and the guides available from AAP.<sup>2</sup>

Figure 1. Key EHR and technical capabilities to implement comprehensive preventative recommendations like Bright Futures



### Findings

We identified three key aspects (see Figure 1 above) of clinic EHR and technical capabilities that highlight both assets and challenges in implementing a comprehensive set of preventive recommendations similar to Bright Futures: (1) clinic resources, (2) data availability, and (3) analytics and informatics tools. These factors are only a subset of aspects important for successful Bright Futures implementation. For example, recall and reminder functions and a system for prompting when preventive services are indicated are both integral to Bright Futures and can feasibly be integrated in an EHR system.<sup>3</sup> However, because we did not discuss these features during data collection, we have omitted them from



the discussion here. Additionally, we did not examine these research questions in terms of patient linguistic diversity. However, issues such as translation services, multiple language screening tools, and data entry all may have bearing on the usability of data for assessing service quality. This topic is particularly salient in this study, where almost 70 percent of the study sample identifies as Latinx. Issues of linguistic diversity should be considered in future investigations related to data usability for quality improvement, evaluation, and implementation of best practices.

**Findings: Clinic Resources**

Six of the clinics participating in the study were part of networks with other sites and had robust in-house informatics teams for quality reporting and data analytics. The other three clinics were independent practices or part of smaller networks and did not have robust in-house support.

Among the clinics with in-house support, the informatics teams were knowledgeable about the EHR system and well versed in its capabilities. However, they frequently faced high demand and competing priorities from within the network as well as external reporting requirements (e.g., Uniform Data System reporting to the U.S. Health Resources and Services Administration). In addition, the connection of the informatics teams to clinic services was often limited. Strengthening this connection to clinical teams may facilitate a deeper understanding of data needs and the application of data in clinical practice. This can uniquely

position clinics to create specialized reports tailored to specific initiatives, giving implementers significant flexibility to develop tracking tools to implement comprehensive preventative recommendations.

The three clinics without dedicated informatics teams relied on built-in tools within their EHR systems to extract data. As a result, their extraction capabilities varied based on the level of sophistication and functionality of their systems. Further, the staff supporting EHR data extraction efforts often had additional responsibilities within the clinic which competed for their time. For example, one clinic coordinator who was responsible for supporting data requests, also provided nursing services at the clinic and her clinical duties took precedence over administrative tasks (i.e., pulling data from the EHR system). The limited informatics expertise among staff responsible for data extractions as well as the general lack of dedicated health IT staff could present challenges for clinics with similar structures trying to take up Bright Futures or implementing similar pediatric innovations.

**Findings: Data Availability**

Many of the measures used for the study (e.g., maternal depression and age-appropriate developmental screenings) are part of the recommended Bright Futures services. The ability to track these measures at the population level will help clinics understand their success in achieving Bright Futures goals and can be used for tracking quality improvement efforts.

Importantly, all nine clinics reported collecting pediatric quality of care metrics: well-child visits, immunizations, maternal depression screenings, developmental screening, and lead screening. However, they did not all store these data the same way, affecting how accessible the information would be for population management. In particular, screening results were often not captured; for example, the EHR recorded only a note that the screening was administered, or captured screening results in an unstructured format, such as scanning paper screening forms into the system or entering the results into a free-text notes field.

Maternal depression screening was the least commonly recorded of the screening tests across the participating clinics. The lack of a defined field within the child's EHR for recording maternal data may be one factor preventing the systematic collection of maternal depression screenings. One clinic noted that maternal depression screening information was only captured for mothers who were also patients in the clinic and recorded in the mother's medical record instead of the child's record.

#### **Findings: Analytics and Informatics Tools**

EHR and population management software tools are powerful resources that can assist clinics in reporting and quality improvement. Systems vary widely in their flexibility and adaptability. Of the clinics in this study, four relied on the assistance of population management tools for extracting data to support evaluation. Use of population management tools can facilitate extraction of data from EHR systems that might otherwise be difficult to pull in a structured format. However, there are often significant time and resource requirements needed to develop a report that is tailored to initiative or evaluation needs. For example, one clinic used i2iTracks population health management software which required mapping fields from the EHR followed by linkage to i2iTracks to enable reporting through that system.

Two other clinics had EHR systems with significant flexibility, allowing them to create customized reports that provided much of the data we requested for our evaluation. With one of these clinics, this approach worked well for some measures, and not for others (e.g. lead screening). The other clinic used an EHR system designed specifically for pediatric practices called Physician Computer Company. This company markets products specifically for pediatric practices and embeds the Bright Futures recommendations directly into their EHR system.<sup>4</sup>

Additionally, a transition within a clinic from one EHR system to another presents several challenges for quality

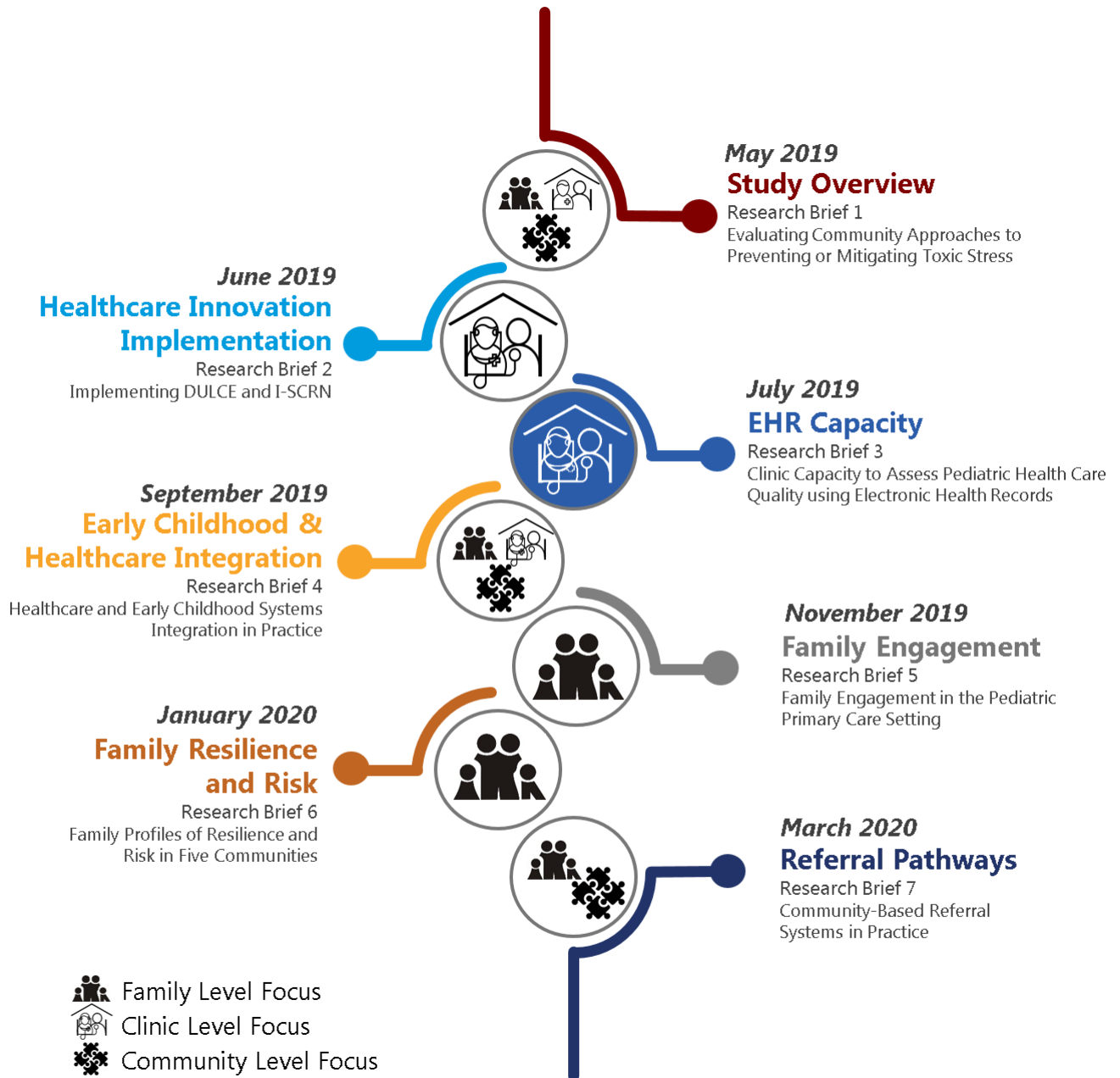
improvement tracking and implementation of new initiatives. First, when changing from one EHR vendor to another, a clinic must decide what and how much data to migrate from their old system to the new system. This can be a time-consuming and costly venture in terms of resources and strain on staff. Depending on the quantity and selection of data fields migrated, the clinic may lose the ability to track some metrics over time. New EHR systems also require staff to learn a new data infrastructure and procedures to perform functions like tracking quality measures within the new system. During this transition phase, it may be difficult or time consuming to perform functions like dashboard development and quality improvement tracking. Three participating clinics had recently undergone changes in EHR systems. At one clinic, the team is transitioning retrospective data from their previous EHR system, which may result in historical data fields being inaccessible. Another clinic experienced an EHR transition and practice merge in 2016 and, as a result, is unlikely to be able to extract data entered prior to 2016. Finally, a third clinic is planning to change vendors in late 2019.

#### **Summary**

This brief details efforts of the *Evaluating Community Approaches to Preventing and Mitigating Toxic Stress* study team to work with clinics to support the evaluation and, specifically, facilitate the delivery and monitoring of pediatric services derived from Bright Futures recommendations. We found that there was great variation in the collected data, the meanings assigned to the data values, the amount and kind of contextual information retained, the timing of data collection, and the level of detail available. Many of these components may also be further compounded by issues of language diversity among patients as well as literacy levels for patients with less formal education that are not explored in this brief. We identified several aspects of EHR capacity and clinic factors that can present as barriers to the suitability and use of EHR data. Using EHR data for this study is fundamentally different from its primary purpose—to support and document the clinical and administrative records for healthcare visits. To improve functional use of data from EHR beyond this purpose and build capacity to support evaluation of initiatives like Bright Futures, clinics may benefit from addressing issues related to system and staff efficiency, data exchange capabilities, and general EHR functionality.

Chapin Hall at the University of Chicago is committed to delivering actionable recommendations from our research to inform our partners, policymakers, and the early childhood field, broadly. Figure 2, below, outlines the timeline for a series of research briefs tailored to clinics, families, and national partners that highlight our key study findings.

Figure 2. Evaluating Community Approaches to Preventing or Mitigating Toxic Stress: Research Brief Series



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The opinions, findings, and recommendations expressed in this publication are solely those of the authors and do not necessarily reflect those of The JPB Foundation, The Center for the Study of Social Policy, the American Academy of Pediatrics, or our clinic partners.

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<sup>1</sup> Lannon, C. M., Flower, K., Duncan, P., Moore, K. S., Stuart, J., & Bassewitz, J. (2008). The Bright Futures Training Intervention Project: implementing systems to support preventive and developmental services in practice. *Pediatrics*, *122*(1), e163-e171.

<sup>2</sup> <https://brightfutures.aap.org/materials-and-tools/Pages/default.aspx>

<sup>3</sup> See <https://www.pcc.com/aaps-bright-futures-4th-edition-has-been-released-pcc-will-be-first-pediatric-ehr-vendor-to-feature-this-updated-content/>

