What We Know About Current Electronic Health Record Tools for the Identification and Management of Child Abuse

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This brief summarizes findings from "Electronic Health Record Tools to Identify Child Maltreatment: Scoping Literature Review and Key Informant Interviews" published in *Academic Pediatrics*[1] in 2022.

The authors documented the existing research evidence on the performance of electronic health record-based screens and clinical decision supports systems for the identification and management of child abuse. They also conducted semi-structured interviews with clinicians to examine their perspectives regarding the use of such tools and factors that affect uptake.

Current evidence does not support adoption of a particular electronic health record-based screen or clinical decision support system for child abuse. However, interviewees saw promise in implementing such tools, highlighting the need for further research and development.

Health visits provide opportunities for medical personnel to identify child maltreatment. However, detecting child maltreatment is challenging because the signs and symptoms vary widely depending on the type(s) of abuse, the age of the child, and other factors. One way that hospitals and health systems are trying to improve the identification and management of suspected cases of child abuse is to embed tools in their electronic health record (EHR) systems.

This research brief summarizes findings from Stilwell et al.[1], which reviewed existing research on EHR-based child abuse screens (EHR-CA-S) and clinical decision support systems (EHR-CA-CDSS). EHR-CA-S are screens for injuries or behaviors concerning for child abuse that have been incorporated into the EHR. Examples of EHR-CA-CDSS include alerts that appear in the EHR when a provider enters information that aligns with an injury concerning for child abuse. The authors also collected the perspectives of medical personnel on the implementation of such tools.

STUDY

Researchers conducted a scoping literature review for articles that described and/or evaluated an EHR-CA-S and/or EHR-CA-CDSS used by health systems for the identification or management of child abuse in patients 0 to 18. The search for articles was conducted in August 2020 and repeated in November 2021. To provide a deeper understanding of providers' experiences with and perceptions of these tools, researchers conducted interviews with child maltreatment experts on the benefits and challenges of implementing EHR-CA-S and/or EHR-CA-CDSS between May and September 2020.
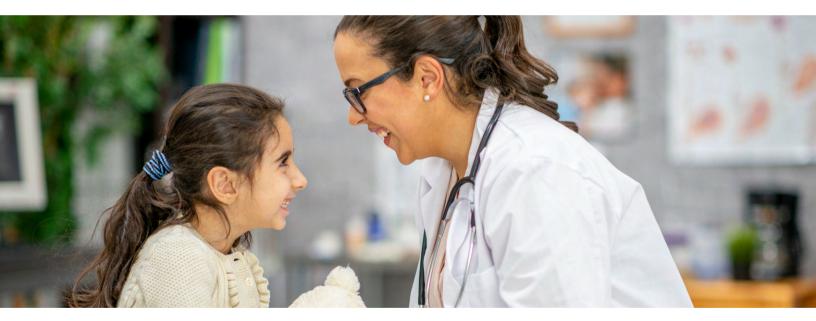
LITERATURE REVIEW FINDINGS ON EHR-BASED CHILD ABUSE SCREENING AND CLINICAL DECISION SUPPORT TOOLS

The literature review identified 574 articles, 16 of which met inclusion criteria. The included studies examined screening tools, alerts and triggers, and quality improvement efforts. Much of the research in this area has focused on EHR-CA-S, with half of the included studies evaluating or describing an EHR-CA-S. No study evaluated long-term clinical outcomes.

- **Screening tools tested in emergency department (ED) settings had few positive screens, high rates of false positives, low rates of false negatives, and completion rates that varied based on whether use of the tool was mandatory.** Five studies examined EHR-CA-S in ED settings. The percent of positive screens for abuse ranged from 1.9% to 4.3%. Three of the five studies provided information on the predictive power of their screening tool. An expert panel found that for children who screened positive, the percent of children suspected of experiencing abuse ranged from 3% to 45%, meaning many children who screened positive were later deemed unlikely to have experienced abuse. On the other hand, the predictive power of a negative screen was high, with nearly all children who screened negative found unlikely to have been abused. Even when the EHR-CA-S was mandatory, not all children were screened; in one study, the EHR-CA-S was used on only 2/3 of eligible children. All of the studies took place in the Netherlands or the United States.

- **Two studies examining the use of EHR-CA-S in out-of-hours primary care facilities found that less than 1% of children screened positive, the majority of which were false positives.** An expert panel found that over 90% of the children who screened positive were found unlikely to have experienced abuse. Both of these studies occurred in the Netherlands, where screenings have been required in out-of-hours primary care facilities since 2011.

- **Four studies described and evaluated the same or slightly modified clinical decision support system (EHR-CA-CDSS) and found that these systems were not frequently activated and did not increase compliance with American Academy of Pediatrics (AAP) guidelines, which was high (70-80%) at baseline.** The EHR-CA-CDSS would trigger an alert when a provider entered information in the EHR that aligned with injuries concerning for physical abuse in children younger than 2 years. The alert notified providers regarding the possibility of abuse, which they had to acknowledge. It would also direct them to a predefined set of laboratory tests, radiological studies, and consultations to be ordered—referred to as an "order set"—based on guidelines established by the AAP. One study documented the challenges of adapting this EHR-CA-CDSS into two other hospital systems with different EHR platforms. While possible, the authors of the study noted it was "time-consuming" and "cumbersome," thus limiting scalability.

- **A few studies focused on quality improvement initiatives, which varied and involved implementing different tools, including screens, order sets, and simple diagnostic coding strategies.**

- **The majority of the studies on EHR-CA-S and EHR-CA-CDSS were conducted in emergency departments and/or academic medical centers.** None of the examined studies were completed in urgent care centers and all EHR-CA-CDSS tools were implemented in academic medical settings.

CLINICAL PERSPECTIVES ON EHR CHILD ABUSE SCREENING AND CLINICAL DECISION SUPPORT TOOLS

Interviewees were asked whether their hospital or health system was using EHR-based strategies for the screening and/or management of child abuse and, if yes, what types of tools were being used, the process of implementing these tools, and whether these tools had any impacts on care. Regardless of whether their hospital/health system was using an EHR-based tool, all interviewees were asked about the facilitators and barriers to implementing EHR-CA-S and/or EHR-CA-CDSS, concerns they have with these tools, and potential impacts of these tools on care.

- Multiple factors influence the adoption of child abuse EHR screening tools, including the devastating consequences of missed cases, lack of standardization for identifying and managing children with abuse concerns, and a requirement by The Joint Commission[1] for hospitals to have written, objective criteria to identify and assess potential cases of child abuse.[2]

- Having a champion (*i.e.*, someone who is heavily invested in the project and pushing for its successful completion), as well as institutional, technical, and staff support were mentioned as the main facilitators of adoption of EHR-CA-S and EHR-CA-CDSS.

- Clinicians who had used child abuse EHR tools reported they believed the tools improved documentation and awareness of abuse, helped standardize patient care, and reduced bias.

- Barriers and concerns about adoption of EHR-CA-S and EHR-CA-CDSS included concerns about bias, consequences of positive screens for children and families, the amount of time that EHR-CA-S and EHR-CA-CDSS require to implement, the current lack of evidence on the effectiveness of these tools, and the difficulty of evaluating the impact of such tools, given the limited ability to collect baseline data.

- Interviewees saw the value of child abuse EHR tools as being greater in community settings (*e.g.*, primary care, urgent care, specialty clinics, etc.) that may not have child maltreatment specialists, rather than in academic medical centers and children's hospitals. Interviewees noted that academic medical centers and children's hospitals are more likely to implement such tools but typically have trained child maltreatment specialists and/or pediatricians on staff and therefore may not be the facilities most likely to benefit from such tools.

[1] The Joint Commission is a health care standards-setting and accrediting body that works to improve health care for the public. The Joint Commission sets national health, quality and safety standards in the United States.
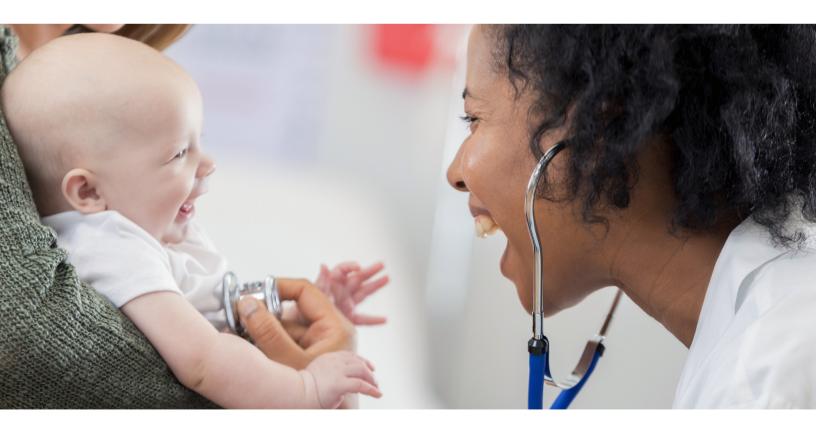[2] Joint Commissions Standard PC 01.02.09 on Victims of Abuse. https://www.futureswithoutviolence.org/joint-commissions-standard-pc-01-02-09-on-victims-of-abuse/.

IMPLICATIONS FOR HEALTH CARE PROVIDERS AND SYSTEMS

Health care providers play a critical role in identifying child maltreatment. Given the high cost of missing child abuse cases, more investment is needed in the infrastructure to support accurate, unbiased evaluation of children. Current evidence does not support adoption of a particular EHR-CA-S or EHR-CA-CDSS but does point to the potential value of such tools and the need for further development and evaluation.

Clinicians noted a number of benefits to using such tools, particularly in community settings. These benefits included improved documentation, more standardized patient care, and the potential to reduce bias. However, in the United States, there is established evidence of racial and socioeconomic bias in evaluations for child maltreatment, with black and low-income children more likely to be suspected of experiencing abuse. Consequently, clinicians noted it is particularly important to ensure that new screening and clinical decision support tools do not recodify historical biases. More research is needed to assess how these systems impact bias in child maltreatment evaluations.

When deciding whether to implement EHR-CA-S and/or EHR-CA-CDSS, hospitals, health care systems, and providers should weigh the pros and cons of adopting existing tools or developing their own. They should consider how these tools will be integrated into their current workflows, the amount of time the tools require to develop and implement, and whether they have systems in place to handle increased positive screens, such as the ability to easily consult with child abuse physicians. Clinicians also noted that successful adoption is more likely when strong institutional, technical, and staff support exist. To better guide hospitals and health systems in their decisions on adopting these EHR tools, future research should include cost-benefit analyses.