Impact of the meaningful use incentive program on electronic health record adoption by US children’s hospitals

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ABSTRACT

Objective We determined adoption rates of pediatric-oriented electronic health record (EHR) features by US children’s hospitals and assessed perceptions regarding the suitability of commercial EHRs for pediatric care and the influence of the meaningful use incentive program on implementation of pediatric-oriented features.

Materials and Methods We surveyed members of the Children’s Hospital Association. We measured adoption of 19 pediatric-oriented features and asked whether commercial EHRs include key pediatric-focused capabilities. We inquired about the meaningful use program’s relevance to pediatrics and its influence on EHR implementation priorities.

Results Of 164 general acute care children’s hospitals, 100 (61%) responded to the survey. Rates of comprehensive (across all pediatric units) adoption ranged from 37% (age-, gender-, and weight-adjusted blood pressure percentiles and immunization contraindication warnings) to 87% (age in appropriate units). Implementation rates for several features varied significantly by children’s hospital type. Nearly 60% of hospitals reported having EHRs that do not contain all features essential for high-quality care. A majority of hospitals indicated that the meaningful use program has had no effect on their adoption of pediatric features, while 26% said they have delayed or forgone incorporation of such features because of the program.

Conclusions Children’s hospitals are implementing pediatric-focused features, but a sizable proportion still finds their systems suboptimal for pediatric care. The meaningful use incentive program is failing to promote and in some cases delaying uptake of pediatric-oriented features.

Key words: electronic health records; pediatric hospitals; health policy; meaningful use

INTRODUCTION

Electronic health records (EHRs) are widely regarded as vital tools for providing safe and effective care. At the point of care, EHRs afford access to longitudinal patient information and offer clinical decision support to help providers make better decisions and avoid errors. EHRs are also instrumental in enabling providers, organizations, and health systems to gather data on their performance and patient outcomes to inform and evaluate quality improvement efforts. In both pediatric and adult medicine, when EHRs or key EHR component parts are used effectively, they have been associated with better adherence to recommended practices and improved safety. To help realize the potential of EHRs within the US health system, the Health Information Technology for Economic and Clinical Health Act of 2009 authorized incentives for hospitals and providers who demonstrate “meaningful use” of specified electronic capabilities using a certified EHR. Children’s hospitals are eligible for incentives administered through state Medicaid programs.

Perhaps in part due to the meaningful use incentive program, which began operating in 2011, EHR adoption rates have increased substantially in recent years, including among children’s hospitals. However, EHRs that are suitable for pediatric patients differ in crucial ways from systems used for adult patients. Statements from the American Academy of Pediatrics (AAP), as well as studies on EHR use in pediatrics,
indicate that although the same general components are valuable in both pediatric and adult medicine, these components require certain features, including pediatric content and capabilities, to be effective in the care of children and adolescents. Computerized provider order entry (CPOE) systems, for example, should include content such as order sets for common pediatric conditions and capabilities such as weight-based dose calculations. Good clinical decision support tools tailored toward pediatric care should address content areas such as childhood immunizations and include capabilities such as dynamic tailoring of reminders based on age. Displays of data such as vital sign measurements, growth measurements, and laboratory results should include reference ranges based on a patient’s age, as well as the ability to determine age- and gender-based percentile values or Z-scores (number of standard deviations from the mean) for data such as height, weight, head circumference, and body mass index. Throughout the EHR, age should be displayed in appropriate units (days for neonates, months for infants and toddlers, and years for older children), with calculation of corrected gestational age for premature infants. The Stage 1 meaningful use criteria focus on important general components, such as having and using CPOE and clinical decision support, but give little consideration to whether those functionalities incorporate content and capabilities that support pediatric care. We are unaware of any data on whether children’s hospitals, as they implement EHR components, are incorporating pediatric-specific features.

Children’s hospitals could succeed in meeting meaningful use incentive program on adoption of pediatric-oriented EHR features. Specifically, we sought to answer the following questions: First, how widely have children’s hospitals adopted pediatric-oriented EHR features, and does adoption vary by children’s hospital type? Second, do children’s hospitals find that commercial EHRs provide needed features for pediatric care? And finally, what is the perceived influence of the meaningful use incentive program on adoption of pediatric-oriented EHR features?

METHODS
Survey Development and Content
We developed the survey after reviewing statements from the AAP and literature on which EHR features are uniquely or especially important for pediatric care. After considering which features are essential for effective and safe pediatric care based on expert reports and the judgment of study investigators (who included the Chief Medical Information Officers for two children’s hospitals and experts on health information technology (HIT) policy and adoption), we evaluated implementation of 19 features. These encompass a variety of EHR components, including vital signs and growth data, immunization management, and clinical decision support. Using an approach adapted from the American Hospital Association’s annual information technology survey, we measured the extent of implementation as (1) not planned, (2) being considered or planned within the next year, (3) complete in at least 1 but fewer than half of pediatric units, (4) complete in at least half but not all pediatric units, or (5) complete in all pediatric units.

We asked about inclusion of pediatric-oriented features in commercial EHR systems and perceptions regarding the suitability of these systems for pediatric care. We inquired about the extent to which respondents agreed with the statement “Commercial EHR products incorporate essential pediatric capabilities for pediatric care” (answer options: “Strongly agree,” “Somewhat agree,” “Somewhat disagree,” “Strongly disagree”). We also asked respondents to report which pediatric-focused capabilities were offered by their EHR vendor (we provided a list of 7 options) and what approaches they used, if any, for adding capabilities that were not already included (answer options included approaches such as development in partnership with their vendor and local self-development). In addition, we asked the simple yes-or-no question “Does your clinical EHR system include all of the capabilities your hospital finds necessary to provide high-quality pediatric care?”

We also asked about perceptions of the meaningful use incentive program’s influence on EHR adoption priorities and the relevance of meaningful use criteria to pediatrics. We asked how seeking to meet meaningful use criteria within the program’s time line has affected incorporation of pediatric-tailored EHR capabilities (answer options included delaying or forgoing incorporation of many or a few pediatric-tailored capabilities, no effect on incorporation of pediatric-tailored capabilities, or incorporating pediatric-tailored capabilities included in the meaningful use criteria that the hospital would not have incorporated otherwise). We inquired about the extent to which respondents agreed with the statement “The meaningful use criteria adequately address pediatric clinical needs” (answer options: “Strongly agree,” “Somewhat agree,” “Somewhat disagree,” “Strongly disagree”). In addition, we asked respondents to indicate the 2 greatest challenges to their hospital’s achieving meaningful EHR use (we provided a list of 8 options, including “Lack of relevance of meaningful use criteria to pediatric care” and “Inability of EHR products to meet pediatric clinical needs”).

Respondents were instructed to reply to all questions specifically with regard to patients aged 0 to 18 years. The full survey is provided in the online-only supplementary material. To ensure that the survey questions were clear, relevant to children’s hospitals, and not overly time-consuming to complete, we pilot tested our instrument. We asked Chief Information Officers or Chief Medical Information Officers at a few children’s hospitals to review the survey. Children’s Hospital Association (CHA) staff involved in HIT policy also assessed the survey for clarity and considered whether it was applicable to and could be completed easily by non-freestanding children’s hospitals.
Identification of Children’s Hospitals
We identified children’s hospitals using the CHA member directory and administered the survey to all CHA member hospitals. However, we focused our current study on three categories of general acute care hospitals: (1) freestanding children’s hospitals; (2) non-freestanding children’s hospitals, referred to as “children’s hospitals within hospitals;” and (3) associate hospitals, a CHA membership category requiring a pediatric graduate education program affiliated with a medical school, a minimum daily pediatric census of 45, and recognition as a pediatric referral center.23 We chose to examine these three categories of hospitals because they comprise a segment of children’s hospitals that would be expected to have relatively similar patient populations and thus similar HIT needs. We excluded from the current study (1) general acute care hospitals that were not included in any of the 3 CHA membership categories above and (2) hospitals identified as specialty hospitals by CHA (e.g., rehabilitation hospitals and hospitals focused on care for specific conditions, such as burns or orthopedic conditions).

Survey Administration
We administered the survey from September 2011 through May 2012 using CHA’s web-based Survey Center. We chose this time period in order to assess the early impact of the meaningful use incentive program on children’s hospitals, including its reported influence on their EHR implementation priorities. For each hospital, we emailed an administrator involved in HIT implementation (for nearly all hospitals, this administrator was the Chief Information Officer or Chief Medical Information Officer), identified through CHA’s membership database, with an invitation to participate and a link to the survey. Rather than stipulating formal qualifications for survey respondents, such as having a medical background or a minimum duration of experience at the hospital or in the field of HIT, we asked that the survey be completed by the person(s) most knowledgeable about EHR adoption and use for the hospital’s pediatric patients. No hospitals had to be excluded due to lack of an administrator involved in HIT implementation. We encouraged non-responding hospitals to participate via multiple emails and telephone calls and also by mailing a printed survey. The study was considered exempt from human subjects review by the institutional review boards of Boston Children’s Hospital and the Harvard School of Public Health.

Analysis
We evaluated characteristics of hospitals that responded and did not respond to the survey, including hospital size, geographic region, ownership status, and children’s hospital type. We also evaluated hospitals’ teaching status, categorized as major teaching (defined by membership in the Council of Teaching Hospitals and Health Systems), minor teaching (defined by Accreditation Council for Graduate Medical Education approval to participate in residency training or affiliation with a medical school), or non-teaching.24 We used a logistic regression model with hospital characteristics as covariates to predict each hospital’s likelihood of responding to the survey. We used the reciprocal of these propensity values as weights in all analyses to correct for potential non-response bias.

We assessed the extent of adoption of pediatric-oriented EHR features and examined whether rates of comprehensive adoption, defined as complete adoption across all pediatric units, varied significantly by children’s hospital type. We calculated the frequency of responses to questions about the suitability of commercial EHR systems for pediatric care. We also evaluated the frequency of responses to questions about the effects of the meaningful use incentive program and its relevance to pediatrics. We used logistic regression for analyses. A 2-sided $P < .05$ was used as the criterion for statistical significance.

RESULTS
Survey Respondents
Of the 164 general acute care CHA hospitals, 100 (61%) responded to the survey. As is typical of children’s hospitals overall, nearly all responding hospitals were major or minor teaching hospitals and were medium to large in size (Table 1). Hospitals were distributed fairly evenly among geographic regions. Private, non-profit institutions and freestanding children’s hospitals were more likely to respond to the survey than publicly owned hospitals or those that were not freestanding.

Overall Extent of Adoption of Pediatric-Oriented Features
As described in the Methods under “Survey Development and Content,” we reviewed statements from the AAP and literature on EHR features that are important in pediatric care to identify key pediatric-oriented EHR content and capabilities. Rates of comprehensive adoption of these 19 features ranged from as low as 37% for age-, gender-, and weight-adjusted blood pressure percentiles and immunization contraindication warnings to as high as 87% for age in appropriate units. Table 2 shows results for the 10 features with the lowest adoption rates and/or the greatest difference in adoption rates based on type of children’s hospital (results presented below), while eTable 1 (in the online-only supplementary material) shows results for the remaining 9 features. For each pediatric-oriented feature, 15% or fewer hospitals reported partial implementation (i.e., adoption in at least 1 but not all pediatric units) (Table 2 and eTable 1 in the online-only supplementary material). Twenty percent or more hospitals reported having no plan to implement age-, gender, and weight-adjusted blood pressure percentiles; Z-scores for growth; age-based norms for vital signs; immunization contraindication warnings; and care pathways and/or practice guidelines for pediatric conditions (Table 2).

Children’s Hospital Type and Extent of Adoption of Pediatric-Oriented Features
Rates of comprehensive adoption were comparable for freestanding children’s hospitals and children’s hospitals within hospitals but lower for associate hospitals for several pediatric-oriented functionalities. Adoption rates were significantly lower for associate hospitals for growth charts for patients 2 to 20 years of age, pediatric immunization history, weight-based...
dosing calculations, and order sets for pediatric conditions (Table 3). In addition, freestanding children’s hospitals reported having EHRs that included age-, gender-, and weight-adjusted blood pressure percentiles at a higher rate (48%) than either children’s hospitals within hospitals (38%, \( P = .02 \)) or associate children’s hospitals (28%, \( P < .01 \) (Table 3)). Because large hospitals and teaching hospitals tend to have higher adoption rates for EHRs in general, we adjusted these analyses for hospital size and teaching status.

### Suitability of EHRs for Pediatric Care

In response to the yes-or-no question “Does your clinical EHR system include all of the capabilities your hospital finds necessary to provide high-quality pediatric care,” 57% of hospitals responded no. Regarding the statement “Commercial EHR products incorporate essential capabilities for pediatric care,” only 25% strongly agreed and more than 1 in 3 children’s hospitals disagreed (Figure 1A). Hospitals reported using a variety of strategies for adapting commercial EHRs to pediatrics, including development of EHR products in partnership with a vendor (73% of respondents); local customization/adaptation of commercial EHR products, independent of a vendor (66%); local self-development of EHR components (47%); and development in collaboration with other hospitals (36%).

### The Meaningful Use Incentive Program and Pediatric-Oriented Features

We found that 54% of respondents agreed at least somewhat with the statement “The meaningful use criteria adequately address pediatric needs,” with 46% somewhat or strongly disagreeing (Figure 1B). When asked how seeking to meet meaningful use criteria within the incentive program’s timeline has affected incorporation of pediatric-tailored capabilities, 61% of respondents said the program has had no effect (eTable 2 in the online-only supplementary material). Five percent reported that the meaningful use program has caused them to incorporate pediatric-tailored capabilities they would not have implemented otherwise, while 26% reported that it has caused them to delay or forgo incorporating a few or many pediatric-tailored capabilities. Lack of relevance of the meaningful use criteria to pediatric care was among the most commonly cited barriers to achieving meaningful use (32% of respondents), together with resistance from providers (34%), lack of health information technology personnel (34%), and the challenge of meeting

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**Table 1: Survey respondents**

<table>
<thead>
<tr>
<th>Hospital characteristics</th>
<th>Respondents</th>
<th>Non-respondents</th>
<th>( P )-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( N = 100 ) (61%)</td>
<td>( N = 64 ) (39%)</td>
<td></td>
</tr>
<tr>
<td>Teaching</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Major</td>
<td>71 (62)</td>
<td>44 (38)</td>
<td></td>
</tr>
<tr>
<td>Minor</td>
<td>24 (59)</td>
<td>17 (41)</td>
<td>.80</td>
</tr>
<tr>
<td>Non-teaching</td>
<td>5 (71)</td>
<td>2 (29)</td>
<td></td>
</tr>
<tr>
<td>Size</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Small (6–99 beds)</td>
<td>2 (50)</td>
<td>2 (50)</td>
<td></td>
</tr>
<tr>
<td>Medium (100–399 beds)</td>
<td>33 (72)</td>
<td>13 (28)</td>
<td>.19</td>
</tr>
<tr>
<td>Large (400+ beds)</td>
<td>65 (58)</td>
<td>48 (48)</td>
<td></td>
</tr>
<tr>
<td>Region</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Northeast</td>
<td>24 (65)</td>
<td>13 (35)</td>
<td></td>
</tr>
<tr>
<td>Midwest</td>
<td>24 (62)</td>
<td>15 (38)</td>
<td>.83</td>
</tr>
<tr>
<td>South</td>
<td>33 (57)</td>
<td>25 (43)</td>
<td></td>
</tr>
<tr>
<td>West</td>
<td>19 (66)</td>
<td>10 (34)</td>
<td></td>
</tr>
<tr>
<td>Ownership</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>For-profit</td>
<td>0 (0)</td>
<td>1 (100)</td>
<td></td>
</tr>
<tr>
<td>Private non-profit</td>
<td>91 (67)</td>
<td>44 (33)</td>
<td>.001</td>
</tr>
<tr>
<td>Public</td>
<td>9 (33)</td>
<td>18 (67)</td>
<td></td>
</tr>
<tr>
<td>Children’s hospital type</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Freestanding</td>
<td>37 (88)</td>
<td>5 (12)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Hospital within hospital</td>
<td>40 (52)</td>
<td>37 (48)</td>
<td></td>
</tr>
<tr>
<td>Associate hospital</td>
<td>23 (51)</td>
<td>22 (49)</td>
<td></td>
</tr>
</tbody>
</table>

For one non-responding hospital, all hospital characteristics except children’s hospital type were not available. Percentages are calculated across rows.
meaningful use criteria within the hospitals’ implementation time lines (33%) (Figure 2).

**DISCUSSION**

We found that rates of implementation of pediatric-oriented EHR features range from approximately 40% to 80% across US children’s hospitals. However, implementation rates for several key features are significantly lower for associate children’s hospitals than for freestanding hospitals or children’s hospitals within hospitals. Although children’s hospitals are implementing pediatric-oriented EHR features, nearly 60% indicated that their EHRs do not contain the capabilities necessary to provide high-quality pediatric care. Moreover, 1 in 3 hospitals reported that commercial EHRs do not incorporate essential capabilities for pediatrics. Taken together, these findings suggest that US policymakers need to redouble their efforts to ensure that the meaningful use program helps children’s hospitals to implement and use features that will lead to better pediatric care.

We found that a majority of children’s hospitals indicated that the meaningful use program had no effect on their implementation of critical pediatric features because of the program. Stage 2 of the program decreases the minimum age for growth monitoring to zero years and adds pediatric clinical quality measures but otherwise does not incorporate additional pediatric features into the criteria for meaningful use.21,27–29 Without greater emphasis on capabilities and content necessary for pediatrics, the meaningful use program is unlikely to promote adoption of EHRs that meet the needs of children and adolescents.

Because our survey did not directly examine why hospitals implemented some pediatric-oriented features but not others, we cannot explain with certainty the wide range in comprehensive adoption rates for specific features among children’s hospitals. There are several potential explanations. The most commonly adopted features, such as age in appropriate units (87%) and age-based norms for laboratory results (84%) (Supplementary Table S1), may be more frequently included in commercial EHRs and more straightforward to implement, even for hospitals that do not focus exclusively on pediatric care. The features for which we found significantly different adoption rates between freestanding children’s hospitals and associate children’s hospitals, such as order sets for pediatric conditions, may include
those that are common enough overall to provide sufficient power for statistical comparisons yet specialized enough to challenge the resources allocated to pediatric care at associate children’s hospitals. In contrast, the features that are adopted less commonly across all types of children’s hospitals, such as immunization contraindication warnings (37%) and care pathways and/or practice guidelines for pediatric conditions (44%) (Table 2), are more complex and require deep pediatric expertise to develop, perhaps presenting difficulties for all types of children’s hospitals.

Our findings raise important concerns about the impact of the meaningful use incentive program on associate children’s hospitals and, by extension, non-children’s hospitals. We determined that associate children’s hospitals have lower adoption rates for all 10 of 10 essential pediatric-oriented features listed in Table 3. Because children comprise a minority of the patients served by associate children’s hospitals and non-children’s hospitals, these hospitals may have difficulty applying resources to ensure their EHRs are optimized for pediatric care. For these hospitals especially, the meaningful use program may fail to encourage or may even create competing priorities with incorporation of pediatric-oriented features. The end result could be widespread adoption of EHRs that lack pediatric-tailored capabilities; such systems at best fail to

Table 3: Comprehensive adoption of pediatric-oriented features, stratified by children’s hospital type

<table>
<thead>
<tr>
<th>Feature</th>
<th>Freestanding children’s hospitals</th>
<th>Children’s hospitals within hospitals</th>
<th>Associate children’s hospitals</th>
<th>P-value(^a)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Vital signs and growth data</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age-, gender-, and weight-adjusted blood pressure percentiles</td>
<td>16 (48)</td>
<td>15 (38)</td>
<td>6 (28)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Z-scores for growth</td>
<td>18 (57)</td>
<td>15 (41)</td>
<td>5 (22)</td>
<td>.05</td>
</tr>
<tr>
<td>Age-based norms for vital signs</td>
<td>22 (62)</td>
<td>26 (66)</td>
<td>11 (49)</td>
<td>.12</td>
</tr>
<tr>
<td>Growth charts for patient 2–20 years of age</td>
<td>30 (83)</td>
<td>32 (81)</td>
<td>13 (56)</td>
<td>.01</td>
</tr>
<tr>
<td><strong>Immunization management</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Immunization contraindication warnings</td>
<td>14 (40)</td>
<td>16 (43)</td>
<td>7 (29)</td>
<td>.96</td>
</tr>
<tr>
<td>Pediatric immunization history</td>
<td>28 (78)</td>
<td>29 (73)</td>
<td>12 (51)</td>
<td>.03</td>
</tr>
<tr>
<td><strong>Medication management</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age-based medication contraindication warnings</td>
<td>21 (61)</td>
<td>25 (65)</td>
<td>9 (36)</td>
<td>.05</td>
</tr>
<tr>
<td>Weight-based dosing calculations</td>
<td>28 (77)</td>
<td>32 (83)</td>
<td>12 (51)</td>
<td>.03</td>
</tr>
<tr>
<td><strong>Clinical decision support</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Care pathways and/or practice guidelines for pediatric conditions</td>
<td>18 (53)</td>
<td>17 (44)</td>
<td>9 (37)</td>
<td>.20</td>
</tr>
<tr>
<td>Order sets for pediatric conditions</td>
<td>28 (78)</td>
<td>30 (75)</td>
<td>11 (44)</td>
<td>&lt;.001</td>
</tr>
</tbody>
</table>

\(^a\)Multivariate analysis controlling for teaching status, size, region, and ownership. Boldface indicates statistically significant differences (p < .05) between freestanding children’s hospitals and associate children’s hospitals.
facilitate care and at worst endanger care by providing clinical information and decision support that are inaccurate for children.\textsuperscript{21,30} Given that associate children’s hospitals and non-children’s hospitals together care for over two-thirds of US pediatric inpatients,\textsuperscript{31} the impact on the health of children and adolescents could be substantial.

In previous studies of EHR adoption from 2008 to 2011, we found that children’s hospitals, particularly those that are major teaching hospitals, have tended to be among the frontrunners.\textsuperscript{14,32} In the current study, we found that adoption rates for pediatric-oriented features are much in line with children’s hospitals’ previously reported implementation rates for general EHR components such as CPOE and clinical decision support.\textsuperscript{14}

It may be that some children’s hospitals decided to implement EHRs prior to the incentive program and that these hospitals, although now applying and qualifying for incentives, would have adopted EHRs and chosen to incorporate pediatric-oriented features without the program.

Our study has some important limitations. First, because we timed the administration of our survey to examine the early impact of the meaningful use incentive program, our results provide insights about that time period but cannot offer information about how hospitals’ perceptions and plans might have evolved since then. However, to our knowledge, our study offers the most current findings available on inclusion of pediatric-oriented EHR features by children’s hospitals and the influence of the incentive program on these institutions. Second, although we achieved a reasonably high response rate, non-response bias is always a concern. We adjusted our analyses by using weights based on hospital characteristics associated with non-response, but such adjustments cannot fully correct for non-response bias. Third, we were not able to validate survey responses against direct assessments of hospitals’ EHR systems and thus relied on respondents’ reports of the features of their EHRs. Finally, the scope of our study did not allow us to survey non-children’s hospitals, which may be adopting pediatric-tailored EHR capabilities at lower rates because they serve fewer children.

CONCLUSIONS

Although a subset of children’s hospitals, particularly those whose primary mission is pediatric care, has adopted EHRs with pediatric-oriented features, a majority of hospitals do not have systems optimized for pediatrics. Fewer than half of
hospitals have important features such as immunization contraindication warnings or care pathways and practice guidelines for pediatric conditions, and most hospitals without these features do not have plans to implement them. Policymakers can take concrete steps now to address these challenges. First, key pediatric features could be included in stage 3 of the meaningful use incentive program, which is currently being defined. Second, the AAP and CHA could partner with the Centers for Medicare & Medicaid Services to choose key pediatric-oriented features for inclusion in EHR certification requirements. These actions would encourage vendors to develop products that meet pediatric needs and would enable hospitals to prioritize capabilities essential for children. Without such a focus, we are likely to drive uptake of HIT that fails to adequately support care delivery for America’s children.

**AUTHOR CONTRIBUTIONS**

Study concept and design: All authors; Acquisition, analysis, or interpretation of data: Nakamura, Harper, Castro, Jha; Drafting of the manuscript: Nakamura; Critical revision of the manuscript for important intellectual content: All authors; Statistical analysis: Nakamura; Administrative, technical, or material support: Nakamura, Harper, Castro, Jha; Study supervision: Nakamura, Harper, Jha.

**FINANCIAL DISCLOSURES**

Dr. Yu has received funding from the Children’s Hospital Association for serving as their Health Information Technology advisor.

**CONFLICTS OF INTEREST**

None.

**ACKNOWLEDGEMENTS**

Dr. Nakamura had full access to all the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis.

**SUPPLEMENTARY MATERIAL**

Supplementary material is available online at http://jamia.oxfordjournals.org/.

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