

Children's EHR Format Enhancement

Final Recommendation Report

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Project goal

- To identify a core set of requirements from the Children's EHR Format (the Format) and recommended uses of the Format
 - RTI contract with Agency for Healthcare Research and Quality (AHRQ) – 18 months (Jun 2014 – Dec 2015)
 - Funded by Centers for Medicare & Medicaid (CMS)
 - RTI partners: Vanderbilt University, c3 Consulting, American Academy of Pediatrics (AAP)

(Original) Children's EHR Format

Year	Activity
2009	Children's Health Insurance Program Reauthorization Act (CHIPRA); Health Information Technology for Economic and Clinical Health (HITECH) Act
2010-2013	Initial development and public release (February 2013) of the Children's EHR Format by Westat under AHRQ contract with CMS funding; Interactive release (December 2013) via the United States Health Information Knowledgebase (USHIK) Web site
2012-2015	CHIPRA-funded State Evaluation of Children's EHR Format by Grantees in North Carolina and Pennsylvania

Year	<i>New Activity</i>
2014-2015	RTI project to Enhance the Children's EHR Format under AHRQ contract (CMS funding)

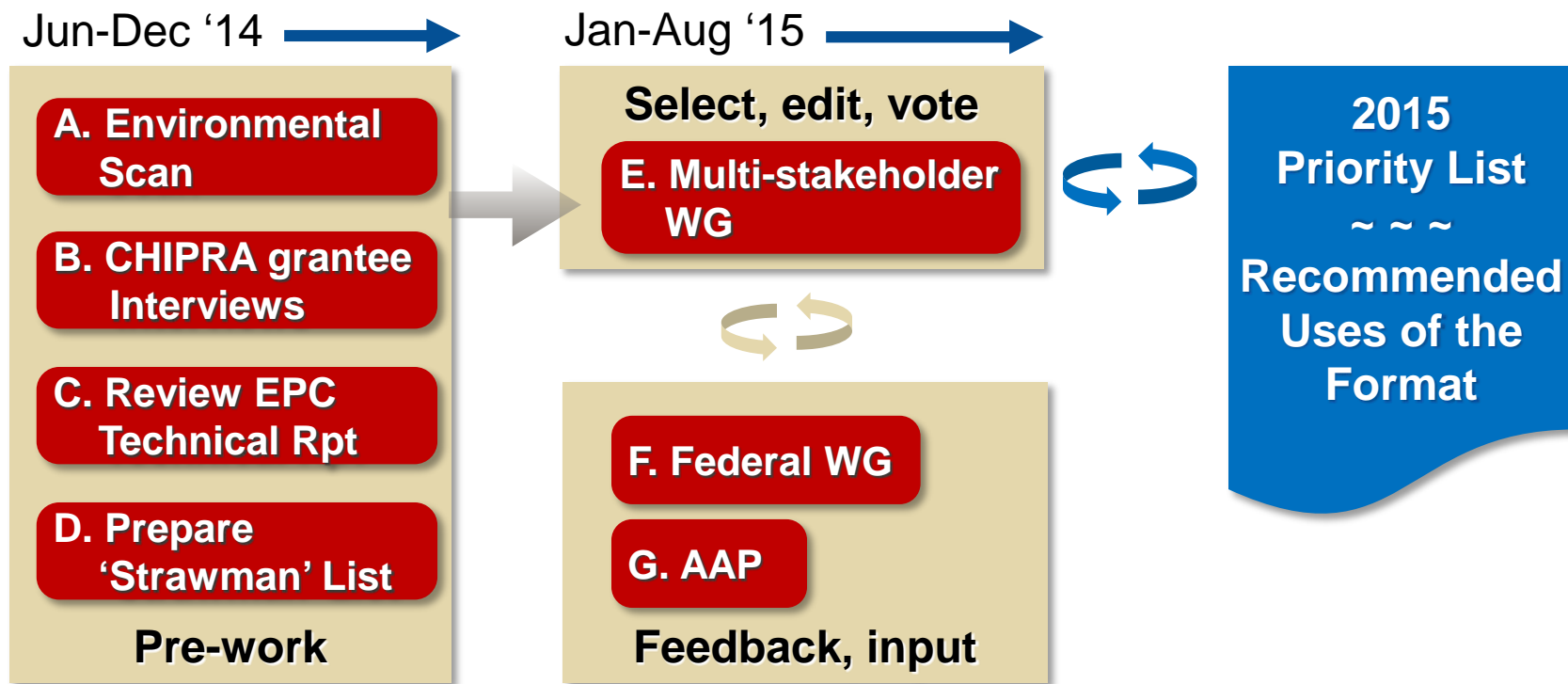
- Children's EHR Format = 547 functional requirements
 - “*The system shall...*”
 - *Title: Flag special healthcare needs (Req-2014)*
 - *Description: The system shall support the ability for providers to flag or unflag individuals with special health care needs or complex conditions who may benefit from care management, decision support, and care planning; and shall support reporting.*
 - 26 topic areas
 - Published and available for download: <http://ushik.ahrq.gov>
 - Based on an assessment of EHRs used in the care of children
 - Environmental scan and gap analysis
 - Interaction with standards organizations
 - Engagement of diverse stakeholders

Requirements by topic

	Topic	The Format	Prewrite	Straw-man	2015 Priority List
	Total Unique Requirements	547	166	99	47
1	Well Child/Preventive Care	131	45	25	12
2	Security and Confidentiality	24	7	5	7
3	Medication Management	38	14	8	6
4	Primary Care Management	47	14	6	5
5	Child Welfare	24	8	4	4
6	Growth Data	60	35	11	4
7	Newborn Screening	16	5	5	4
8	Immunizations	16	4	4	3
9	Patient Portals - PHR	13	1	1	3
10	Birth Information	66	11	7	2
11	Children with Special Health Care Needs	25	8	3	2
12	Registry Linkages	18	3	3	2
13	Child Abuse Reporting	29	1	1	1
14	EPSDT	14	5	5	1
15	Genetic Information	4	1	1	1
16	Patient Identifier	9	3	2	1
17	Prenatal Screening	17	5	3	1
18	School-Based Linkages	4	2	1	1
19	Specialized Scales/Scoring	39	9	1	1
20	Activity Clearance	8	1	1	0
21	Adolescent Obstetrics	5	2	0	0
22	Community Health	4	1	1	0
23	Parents, Guardians & Family Relationship Data	27	5	0	0
24	Quality Measures	5	2	1	0
25	Records Management	17	4	0	0
26	Special Terminology and Information	10	1	1	0

Project approach

Key activities in developing the 2015 Priority List and Recommended Uses of the Format



Notes: **A.** Review of published and gray literature; **B.** North Carolina and Pennsylvania CHIPRA grantees and stakeholders; **C.** AHRQ Technical Brief, "Core Functionality in Pediatric Electronic Health Records"; **D.** 166 items; **E.** 19 members; **F.** 19 members; **G.** 5 members of the American Academy of Pediatrics

CHIPRA grantee experience

- NC and PA practicing pediatricians, and their vendors, were asked to review Format items, one by one, to:
 - Assess if their EHR “matched” the capability
 - If possible, “implement” the capability (i.e., meet the functional requirement)
- RTI team
 - Reviewed project artifacts
 - Conducted site visits
 - Interviewed providers, vendors, practice managers, information technology (IT) staff, and CHIPRA program leaders

Format benefits

- **Positive overall grantee perceptions of the Format**
 - The Format provided a **helpful framework** for conversations about pediatric needs for EHRs among members of a practice and between practitioners and vendors.
 - Grantees gained a **better understanding** of their EHR's capabilities
- **Priority areas identified by grantees**
 - Automatically calculating percentiles for blood pressure, body mass index (BMI), and growth
 - Accommodating specialized calculations tailored for a child's condition such as Down syndrome
 - Integration of existing screening tools and educational resources into decision support and practitioner workflows
 - Information exchange
 - Integrated reporting and decision support to manage patient panels as well as support the care of individual patients
 - Family linkage to siblings

Format challenges

- **Difficulty interpreting requirements**
 - Use of technical language
 - Examples and supporting materials ambiguous or lacking
 - Vague language
 - Differing interpretations of language by different stakeholders
- **Difficulty prioritizing requirements**
 - 547 items made it difficult to determine what to focus on
- **Some missing requirements/gaps in the Format**
 - Social factors such as socioeconomic status
 - Religious and cultural considerations
 - Food insecurity
 - Conditions in the home
 - Women, infants and children (WIC) assessments
 - Language considerations
- **Limited success adapting their use of the EHRs due to inflexibility**

Multi-stakeholder Work Group

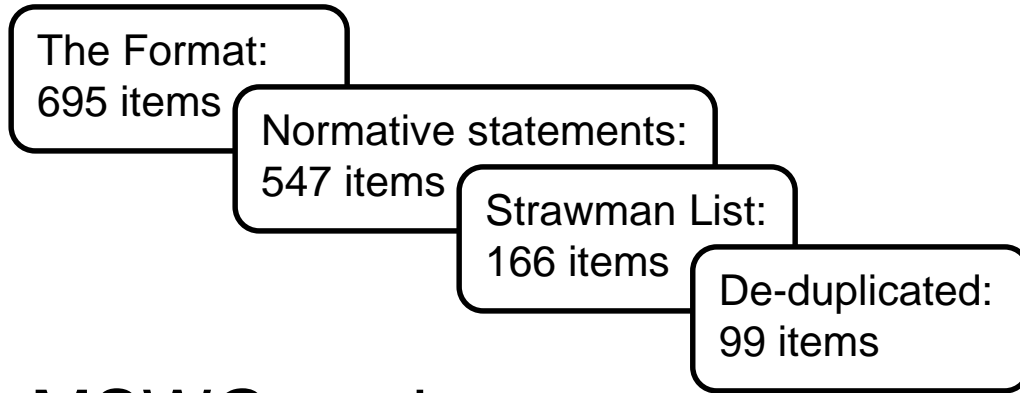
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Federal Work Group

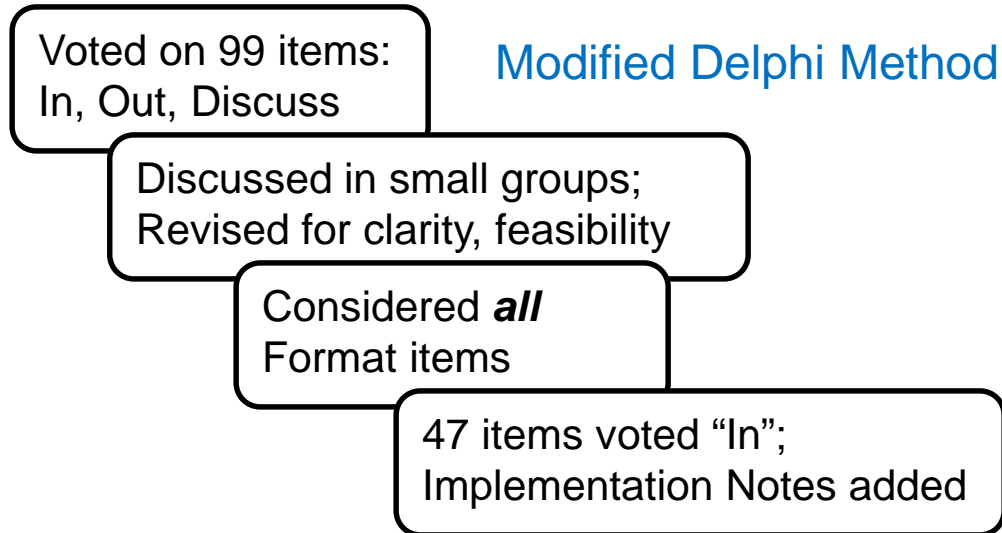
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Processes for developing the 2015 Priority List

Pre-work



MSWG work



Inclusion criteria

- Ambulatory....
- Pediatric specific...

Exclusion criteria

- Inpatient only
- Adult only
- Addressed in MU
- Already common in EHRs
- Solved using a template
- Too vague and/or broad
- Specific, and covered under a general feature

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2015 Priority List vs the Format

- 47 vs. 547 requirements
- 26 vs. 19 topic areas
- Removed hierarchical elements such as headers and function statements
- Removed distinction of “Shall, Should, or May”
- Implementation notes were added

Comparison of a requirement from the 2013 Format (1070) and the 2015 Priority List (2023)

Field	Format, Initial Release	2015 Priority List
ID	Req-1070	Req-2023
Related ID	(not applicable)	Req-1070 (from 2013 Format)
Topic	Well child/Preventive care	Well child/Preventive care
Title	Age/gender-specific previsit history/screening/prevention forms	Support previsit history/screening/prevention forms
Description	The system SHALL support patient/parent completion of previsit history forms selected by specific age and gender-relevant screening/preventive care questions (e.g., ASQ or PEDS).	The system shall record values for pediatric specific previsit parent/patient reported data in a manner that enables retrieval and reporting
Implementation Notes	{this field does not exist}	Interest in patient-provided data through forms completed previsit and available for use during the visit has been growing and exceeds simple registration information prior to the first visit...(truncated to save space)

Stakeholders	Direct Uses
Providers and associated staff who use and select EHRs	<ol style="list-style-type: none"> 1. Inform RFP/RFI development to ensure needed EHR functionality for the care of children 2. Support more productive vendor/provider discussions and expectation setting 3. Support ongoing improvements in the use of the EHR by providers and practice staff
Software developers	<ol style="list-style-type: none"> 4. Improve the design and product road map for an EHR used in the care of children 5. Support better interoperability and integration within and between systems
	<h3 style="text-align: center;">Indirect Uses</h3>
User advocacy groups, EHR system evaluators, and end users	<ol style="list-style-type: none"> 6. Surface opportunities to improve workflow and other aspects of EHR use
School district providers and medical administrators	<ol style="list-style-type: none"> 7. Share information with school districts
CMS, State Medicaid, and CHIP, and private payers and policymakers	<ol style="list-style-type: none"> 8. Improve the alignment of EHR functionality with emerging financial policy
SDO, certification bodies, and professional associations	<ol style="list-style-type: none"> 9. Support standards development 10. Identify functionalities for certifying health IT product functionality (indirect)
State or county health and human services agencies	<ol style="list-style-type: none"> 11. Establish expectations for electronic data capture and retrieval 12. Coordination of care, specifically children with special health care needs
Public health agencies	<ol style="list-style-type: none"> 13. Support the public health functions of population health assessment, public health policy development, and assurance of public health policy compliance
Administrators, care coordinators, and health plans	<ol style="list-style-type: none"> 14. Improve reporting around population health management
Quality reporting measure developers	<ol style="list-style-type: none"> 15. Support for eMeasure development and specification
Pharmacists, pharmacy staff, and pharmacy management system vendors	<ol style="list-style-type: none"> 16. Increase communication with pharmacists to support safer medication use

Overall recommendations

1. Expand Use and Awareness of the 2015 Priority List

- Share among stakeholders
- Inform design and development
- Public access to USHIK

2. Encourage Stakeholder Collaboration to Improve the Format

- Convene stakeholders
- Include diverse perspectives
- Capture and share lessons learned

- **2015 Priority List (PL)**
 - 47 high-priority functional requirements in 19 topic areas
 - Include implementation notes to provide additional guidance
 - Chosen by multi-stakeholder work group to reflect the highest priority functional requirements for EHRs used in the care of children
 - Provide a “starting point” for software developers, EHR users, and EHR purchasers
- **Recommended Uses of the Format**
 - 16 recommended uses of the PL and the Format
 - 5 “direct” uses by software developers, providers, and designers
 - 11 “indirect” uses by other stakeholders
- **Recommendations**
 - 1. Expand use and awareness of the 2015 Priority List
 - 2. Encourage stakeholder collaboration to improve the Format
- **Discussion**
 - Crosswalk, limitations, future work

Discussion

Crosswalk Findings

- Priority List items had greater detail than three comparison documents
- “Close match” and “Concept Addressed” most likely for HL7 CHFP (45%, 26%) than other documents (4%, 17%)
- Most Priority List items were not addressed in Stage 2 or Proposed Stage 3 Certification Criteria (79%)

Status	2015 Priority List items compared with...		
	HL7 Child Health Functional Profile Release 1	Stage 2 Certification Criteria	Proposed Stage 3 Certification Criteria
Close Match	21 (45%)	2 (4%)	2 (4%)
Concept Addressed	12 (26%)	8 (17%)	8 (17%)
Not Addressed	14 (30%)	37 (79%)	37 (79%)
Total	47 (100%)	47 (100%)	47 (100%)

2015 Priority List limitations

- High-priority items are subject to change!
 - Expected that future priority lists will differ as user needs and product capabilities shift
- These items reflect a specific context
 - Interests/backgrounds of MSWG members
 - Time available
 - Heuristics used to include or exclude items
 - Feedback from the FWG and individual AAP members
 - Inputs of the project team
- These are functional requirements (not software specifications)
 - Items may over- or under-state what would be needed for a specific software product
 - 2015 Priority List and Recommended Uses documents are intended to be used to spur dialogue among software users, developers, and other stakeholders

- A number of areas discussed by the MSWG and FWG were deemed important for future work but were not included in the priority list:
 - **Immunization forecasting**
 - Immunization guidelines and periodicity schedules are varied among different states, making specification complex
 - **Specific Populations**
 - A number of important functional areas such as food security, socioeconomic indicators of wellness, and maternal depression screening were excluded because they applied in specific cases rather than in the general population
 - **Quality Measurement**
 - The MSWG's primary focus was to improve EHR use for care activities routinely performed by providers, not quality metrics by themselves
 - **Health IT standards, data harmonization, and data exchange**
 - These were not a direct focus of the MSWG when developing the priority list, but were acknowledged to be important

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Recommendation 1 (detail)

Expand Use and Awareness of the 2015 Priority List

- The Priority List is intended to provide a strong foundation for using EHRs in the care of children.
- The Priority List and Recommended Uses should be shared with software developers, practitioners, and provider organizations.
- The Priority List can serve to inform many software development efforts about functional requirements even if teams lack deep domain expertise in pediatrics, and the typical activities and workflows that matter when caring for children.
- The Recommended Uses list provides suggestions about how key stakeholders can use the Priority List.
- AHRQ's USHIK Web site should be adapted to provide public access to the 2015 Priority List and Recommended Uses of the Format.

Recommendation 2 (detail)

Encourage Stakeholder Collaboration to Improve the Format

- Collaboration across disciplines and stakeholders proved essential in developing and enhancing the Format:
 - Multiple user perspectives help to assure a broad set of requirements are included in the Format
 - Using the Format to tackle different kinds of challenges, such as improving health IT design, requires a multidisciplinary understanding of the problem and proposed solution
 - The Format and the 2015 Priority List items can improve over time as they are used, especially if lessons learned during the implementation of requirements can be captured
 - Convening stakeholders for joint learning and collaboration will help to ensure that the Format and 2015 Priority List items can have the most impact on the care of children