



33 W. Monroe, Suite 1700
Chicago, IL 60603
Phone: 312-915-9582
Fax: 312-915-9511
E-mail:
himssEHRA@himss.org

AllMeds, Inc.
Allscripts Healthcare Solutions
Amazing Charts
Aprima Medical Software, Inc.
Cerner Corporation
ClinNext
CoCentrix
CompuGroup
CPSI
CureMD Corporation
Emdeon
e-MDs
Epic
Falcon EHR, LLC
Foothold Technology
GE Healthcare IT
Greenway Medical
Technologies
Healthland
MacPractice, Inc.
McKesson Corporation
MEDHOST
MEDITECH
Modernizing Medicine
NexTech Systems, Inc.
NextGen Healthcare
Practice Fusion
QuadraMed Corporation
SammyEHR
Sevocity, Division of
Conceptual MindWorks Inc.
Siemens
SRS Software, LLC
STI Computer Services
Suncoast Solutions
Välant Medical Solutions, Inc.
VersaSuite
Workflow.com LLC

April 22, 2014

Karen DeSalvo, MD, MPH, MSc
National Coordinator for Health Information Technology
Attention: 2015 Edition EHR Standards and Certification Criteria Proposed Rule
U.S. Department of Health and Human Services
200 Independence Avenue, S.W.
Washington, D.C. 20201

Dear Dr. DeSalvo:

The member companies of the Electronic Health Record Association (EHRA), with deep expertise in the development and deployment of EHRs in hospitals and physicians' practices, offer our detailed comments on the Notice of Proposed Rulemaking (NPRM) on the Voluntary 2015 Edition Electronic Health Record (EHR) Certification Criteria; Interoperability Updates and Regulatory Improvements. Our response has been developed through the collaborative efforts of several EHRA workgroups to ensure that it represents the range of perspectives and interests of electronic health record (EHR) developers and our customers. It addresses the concept and substance of the proposed 2015 edition, associated policy changes proposed, and the initial view of possible 2017 edition certification criteria.

We also offer this summary to highlight key issues to be considered by ONC staff as they review of our detailed response.

More frequent certification is not desirable and would be costly

We thank ONC for including potential 2017 edition criteria in this NPRM to solicit our input well in advance. Based on our high-level review, we want to be clear on an important point. *While framed in the NPRM preamble as being responsive to and addressing EHR developers' challenges created by uncertain regulatory timelines, this proposed rule focused on a 2015 certification edition and proposing a more frequent certification cadence does not in fact address this issue.* In particular, the proposed rule specifically does not respond to our repeated requests for final rules and all supporting materials and tools at least eighteen (18) months in advance of when providers and others expect certified products to be available.

We recognize that the 2015 certification requirements would be voluntary for the meaningful use program and that there would be no hard deadline for implementation. Nonetheless, we remain very concerned about market expectations of availability of certified electronic health record technology (CEHRT) in an unrealistic timeframe, possibly driven by other government programs that point to the 2015 certification. In fact, with this final rule projected to be released this summer with an effective date as soon as FY/CY 2015, we have much less than a year to design and develop software that has been designated as a “2015 edition,” and for our customers to install and test it, and train users. Knowing that final specifications, test scripts, and tools likely will not be available until months after the final rule comes out, we and our customers actually have even less time for all this work.

Without eliminating our general concerns about a certification edition prior to 2017 or more frequent editions, we respectfully request that ONC at least re-label this as the “2016” edition to provide some semblance of reality in terms of expectations by other federal agencies and EHR users as to when some of the final proposed functionality might be implemented.

In addition, while on the positive side the NPRM fixes some issues that have been identified with the 2014 certification criteria, it also introduces a number of complex new criteria, with a likely high development burden and minimal evidence of provider demand. Examples discussed in our detailed comments include recording and interacting with unique device identifier (UDI) data in the EHR, clinical decision support (CDS) changes that add complexity, and burdensome drug-drug and drug-allergy interaction tracking. Many of the complex new criteria introduced in this NPRM are not included in the Health IT Policy Committee’s (HITPC’s) recently approved Stage 3 proposed requirements. We are concerned that ONC is introducing a new and additional avenue for requirements via certification that has not been vetted through its FACA process first.

Overall, we believe that the stated intention to move to more frequent certification, and this NPRM in particular (in the parts outlining 2015 certification requirements), moves in the opposite direction from our request for adequate time to deliver high quality software, and for our customers to prepare to use it in a meaningful and safe way. It also runs counter to our strong belief that post-2014 certification should be highly focused on interoperability and build on Stage 2 criteria rather than introducing new functional criteria.

We simply do not believe that it is necessary or workable to continue to issue certification criteria at a volume that would suggest the value of more frequent updates. We also do not believe that more frequent formal certification editions are needed to make technical changes or to enable use of updated standards, which we believe can be done via FAQs, technical corrections, or within existing authority (i.e., § 170.555 certification to newer versions of certain standards).

We also want to emphasize that, contrary to the notion that this approach of more frequent certification editions “smooths out” peaks and valleys, we have many other sources of requirements for product functionality, most notably what our customers ask for, as well as other state and federal regulatory requirements. We need time and space to work on these, without the need to annually review, comment on, and implement ONC certification priorities. Moreover, as we have reviewed graphical representations of how the more frequent approach would work, we believe that, while possibly reducing the work in some years, the overall burden over a three (3)-year period is likely to be higher.

Indeed, as illustrated in Attachment A and throughout our detailed comments, the costs of many of the proposed changes, including options identified by ONC, far exceed the ONC estimates. In our view, the

scope and projected costs of this proposed certification edition are at a level that belies its presentation as a “light” incremental change and we have similar concerns about follow-on incremental editions that ONC might propose.

New requirements at a level of 50% of the extent of annual certification for each of three (3) years, as suggested by ONC graphics, will sum much more than the current 100% over the same three (3)-year period. Moreover, based on our experience, we have also found that the “gap certification” approach is not as available as had been projected and does not really add much effective value relative to the burdens associated with new criteria.

Attachment A summarizes the full detailed analysis (Attachment B) and shows that, on average, , ONC estimates are only 10% of what EHRA estimates the development necessary would be. In total, the ONC average estimate of 2015 effort is only 6% of what we estimate (again, an average). (Note: This analysis focuses on criteria proposed for 2015 only (not 2017 or future questions), and duplicate options were eliminated (i.e., if ONC indicated that would propose one of three options, we averaged the options). Overall, we see the scope and projected costs of this proposed certification edition at a level that belies its presentation as a “light” incremental change, and we have similar concerns about follow-on incremental editions that ONC might propose.

Finally, we are generally opposed to a broad unlinking of certification from the HITECH meaningful use program. Although we recognize that there will be situations where meaningful use-certified functionality should be able to be applied to software not intended for meaningful use attestation (especially for interoperability), we support continued application of the original HITPC principle that certification should only include requirements needed to enable providers to satisfy meaningful use objectives and measures. Based on our experience to date, as well as the need for a robust and innovative health IT sector, we do not believe that broad expansion of the current certification approach is desirable.

Mitigate risk to the continued improvements to the electronic clinical quality measure process

The EHRA generally supports the efforts to align standards for both eQMs and clinical decision support (CDS) through the newly launched Clinical Quality Framework (CQF initiative) of the Standards and Interoperability (S&I) framework. We also agree with the strategy to modularize components of the standards to help improve the ability to implement new versions of each standard independently. However, we are concerned that the compressed timeline for this initiative does not allow adequate time to ensure that the critical improvements already underway to the CQM development, testing, and implementation process continue to advance, and are not compromised by rapidly changing standards and requirements that are only just evolving.

The EHRA has been a strong supporter of the efforts by both the Centers for Medicaid and Medicare Services (CMS) and the ONC to improve the eQCM development and implementation process. Many of our members have been active participants in these improvement efforts, along with other stakeholders. These initiatives require focused attention and time, and are critical to ensuring the reliability, accuracy, and validity of the eQCMs as CMS and ONC work to align the quality programs.

At the same time, the inclusion of this framework in 2017 edition certified software is not feasible as it does not leave enough time for ensuring that all affected processes are fully addressed, such as re-engineering the measure authoring tool, the current CQM specifications, and development of new CQM specifications. In addition, the proposed standards are either in development or in draft format, and will require extensive testing and possible modification. Without thorough development, testing, and piloting, the ability to accurately measure healthcare quality and outcomes along with the validity of the

results may be compromised, and the implementation of CDS and eQMs intended to improve care may actually negatively impact patient safety.

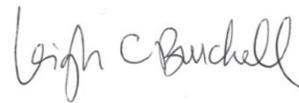
The EHRA therefore strongly urges ONC not to include the proposed unified CDS/CQM standards for 2017 CEHRT. We urge ONC and CMS to consider a more incremental approach to the eventual implementation and adoption of these standards, ensuring that each one has been fully tested and piloted prior to requiring adoption by all EHRs.

The EHRA appreciates ONC's consideration of our comments on this important NPRM. Our industry is at an important juncture relative to health IT certification, and it is essential to consider feedback from all stakeholders to ensure that we move forward in a balanced way to improve program efficiency and effectiveness in support of our shared objectives to facilitate the meaningful adoption and use of EHR technology. We look forward to our ongoing dialog on this topic.

Sincerely,

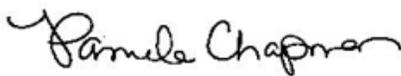


Michele McGlynn
Chair, EHR Association
Siemens



Leigh Burchell
Vice Chair, EHR Association
Allscripts

HIMSS EHR Association Executive Committee



Pamela Chapman
e-MDs



Sarah Corley, MD
NextGen Healthcare



Hatem (Tim) Abou-Sayed, MD
Modernizing Medicine



Meg Marshall, JD
Cerner Corporation



Ginny Meadows, RN
McKesson Corporation



Mark Segal, PhD
GE Healthcare IT

About HIMSS EHR Association

Established in 2004, the Electronic Health Record (EHR) Association is comprised of more than 40 companies that supply the vast majority of operational EHRs to physicians' practices and hospitals across the United States. The EHR Association operates on the premise that the rapid, widespread adoption of EHRs will help improve the quality of patient care as well as the productivity and sustainability of the healthcare system as a key enabler of healthcare transformation. The EHR Association and its members are committed to supporting safe healthcare delivery, fostering continued innovation, and operating with high integrity in the market for our users and their patients and families.

The EHR Association is a partner of the Healthcare Information and Management Systems Society (HIMSS). For more information, visit www.ehrassociation.org.

CC:

Steve Posnack, Director Federal Policy Division, ONC

Jacob Reider, MD, Acting Principal Deputy National Coordinator and Chief Medical Officer, ONC

Attachment A: Summary Comparison of ONC and EHRA Development Estimates for Proposed 2015 Certification Edition

Criterion	ONC average (hr)	EHRA average (hr)	Discrepancy (hr)	Discrepancy (ONC estimate is x% of EHRA estimate)
a2	200	3690	3490	5%
a5	70	427	357	16%
a10	200	6010	5810	3%
a11	70	1270	1200	6%
a15	200	1510	1310	13%
a17	70	1560	1490	4%
a20	200	2940	2740	7%
b1	200	5170	4970	4%
b4	70	1540	1470	5%
b5	70	1870	1800	4%
b6	70	1750	1680	4%
c4	350	1580	1230	22%
d2	70	500	430	14%
e1	200	4270	4070	5%
e2	70	3292	3222	2%
f2	70	1040	970	7%
f3	200	1800	1600	11%
f4	70	770	700	9%
f6	70	1110	1040	6%
g5	350	7000	6650	5%
h1	70	470	400	15%
h2	70	320	250	22%
h3	70	320	250	22%
h4	200	1070	870	19%
Total (sums of hours, average %)	3280	51279	47999	10%

Attachment B: Detailed Comparison of ONC and EHRA Development Estimates for Proposed 2015 Certification Edition

EHRA developed the following analysis and comparison of ONC’s and EHRA members’ estimates of the effort required to develop software to meet the proposed 2015 certification criteria. Responses were from the EHR developers responsible for 50% of EP attestations to date and 23% of EH attestations to date. EHRA development estimates include research, planning and design, development, testing, usability testing, documentation, release, and certification effort. Implementation effort is not included. The estimates presume that the EHR has already been certified against 2014 criteria.

Criterion	ONC Estimate for Development (from pages 10933-10935 of the proposed rule)	Average EHRA Estimate for Development (gathered by surveying EHR developers)	Comments
(a)(2) CPOE-labs	Level 2 100-300 hrs “Revised” criterion	Adopt HL7 2.5.1 IG: 1,450 hrs LOINC 2.4 for lab orders: 1,140 hrs Lab orders include test requisition information: 1,100 hrs	The ONC estimate is significantly underestimated. <i>Statistical comments:</i> <i>While LOINC 2.4 for lab orders and including test requisition information ended up with similar averages, the data was actually different.</i> <i>Using LOINC was split with approximately half of respondents indicating it was a small project and half indicating a jumbo project.</i> <i>Lab orders including test requisition information was reported as a large project by almost all estimators.</i>
(a)(4) drug interactions	Level 2 100-300 hrs “Unchanged” criterion	Track user responses to DDI and DAI: 620 hrs * Adjust DDI and DAI tracking configuration: 620 hrs * Track when an adverse event occurs for an ignored check: 1,570 hrs * *Estimates are for items that are not proposed but where public comment is solicited.	The items for which ONC solicits public comment represent a significant development investment.
(a)(5) demographics	Level 1 40-100 hrs “Revised” criterion	Adopt ISO 639-2 in full: 380 hrs Adopt ISO 693-3: 500 hrs Adopt RFC 5646: 400 hrs	The ONC estimate is significantly underestimated. The preferred language standard requiring the largest development effort is using ISO 639-3 (500 hrs/developer) and the language standard requiring the least development is adopting ISO 639-2 in full (380 hrs/developer).
(a)(6) vitals	Level 2 100-300 hrs “Unchanged” criterion	Native entry: 1,340 hrs* When data is transmitted: 1,456 hrs* Vitals metadata: 620 hrs* CIMI FHIR for vitals metadata: 1,140 hrs* *Estimates are for items that are not proposed but where	The items for which ONC solicits public comment represent a significant development investment.

		public comment is solicited, including using LOINC, SNOMED, and UCUM for native entry of vitals, using LOINC, SNOMED, and UCUM for vitals when data is transmitted, collecting vitals metadata, and using CIMI FHIR for vitals metadata.	
(a)(10) CDS	Level 2 100-300 hrs "Revised" criterion	Infobutton HL7 IG: SOA most recent version: 850 hrs Health eDecisions Use Case 1 – CDS knowledge artifact (simple case): 1,970 hrs Health eDecisions Use Case 1 – CDS knowledge artifact (complex case): 1,970 hrs Health eDecisions Use Case 2 – CDS support query: 1,910 hrs Map CDS knowledge artifact to data in EHR: 1,280 hrs	The ONC estimate is significantly underestimated.
(a)(11) eNotes	Level 1 40-100 hrs "Revised" criterion	Searching across one patient: 1,270 hrs Searching across all patients: 1,920 hrs Using HL7 R2 header metadata: 1,070 hrs	The ONC estimate is significantly underestimated.
(a)(12) drug formulary	Level 2 100-300 hrs "Unchanged" criterion	NCPDP 3.0: 620 hrs* NCPDP 4.0: 1,320 hrs* NCPDP Telecomm with F&B 3.0 or 4.0: 830 hrs* *Estimates are for items that are not proposed but where public comment is solicited.	The items for which ONC solicits public comment represent a significant development investment. <i>Statistical comments:</i> <i>NCPDP 3.0 was estimated as tiny or small by a majority of estimators, with a minority of estimators indicating the project was jumbo.</i>
(a)(15) family history	Level 2 100-300 hrs "Revised" criterion	1,510 hrs	The ONC estimate is significantly underestimated.
(a)(16) patient lists	Level 2 100-300 hrs "Unchanged" criterion	Patient comm preferences for inpatient: 450 hrs* Minimum list of comm preferences: 320 hrs* Preferred language as filter: 740 hrs* Reminders provided according to preferred language and preferred communication method: 1,500 hrs* *Estimates are for items that are not proposed but where public comment is solicited.	The items for which ONC solicits public comment represent a significant development investment.

(a)(17) patient education	Level 1 40-100 hrs "Revised" criterion	Infobutton HL7 IG: SOA most recent version: 1,560 hrs Provide education in preferred language: 770 hrs* *Estimates are for items that are not proposed but where public comment is solicited.	The ONC estimate is significantly underestimated.
(a)(20) UDI	Level 2 100-300 hrs "New" criterion	Enable user to electronically record, access, and view the UDI: 1,260 hrs Parse UDI for device identifier and production identifier: 560 hrs Automate retrieval of information from the GUIDID: 980 hrs* Include UDI in CCDA: 740 hrs Generate list of patients with particular device: 380 hrs *Estimates are for items that are not proposed but where public comment is solicited.	The ONC estimate is significantly underestimated. <i>Statistical comments:</i> <i>Enabling a user to electronically record, access, and view UDI was estimated as small by approximately half of estimators, while approximately half of estimators indicated the project was jumbo, indicating variation across EHR developers. There was a similar split between small and large for automating retrieval from the GUIDID.</i>
(b)(1) TOC	Level 2 100-300 hrs "Revised" criterion	Decouple content and transport – EHRs use EDGE with IMAP4, POP3, SMTP, or IHE XDR: 1,380 hrs Updated CCDA Release 2 from Sept 2013: 1,060 hrs CCDA flexibility 95% performance standard: 1,510 hrs Standardized patient matching data: 1,220 hrs	The ONC estimate is significantly underestimated.
(b)(2) medication reconciliation	Level 1 40-100 hrs "Revised" criterion	Retain outside data provenance after incorporation: 1,260 hrs* *Estimates are for items that are not proposed but where public comment is solicited.	The items for which ONC solicits public comment represent a significant development investment.
(b)(4) incorporate lab results	Level 1 40-100 hrs "Revised" criterion	Adopt HL7 2.5.1 S&I LRI R1: 680 hrs Display lab results according to CLIA: 860 hrs	The ONC estimate is significantly underestimated.
(b)(5) lab results to ambulatory providers	Level 1 40-100 hrs "Revised" criterion	Adopt HL7 2.5.1 S&I LRI R1 with errata: 500 hrs Include in test report more specific CLIA information: 1,370 hrs	The ONC estimate is significantly underestimated.
(b)(6) data portability	Level 1 40-100 hrs	Updated CCDA Release 2 from Sept 2013: 1,060 hrs Including UDI: 690 hrs	The ONC estimate is significantly underestimated.

	"Revised" criterion	<p>Adding electronic notes: 910 hrs*</p> <p>Expanded time boundary for longitudinal data: 1,640 hrs*</p> <p>Header metadata for import/export: 1,210 hrs*</p> <p>Local access/query through an API: 1,740 hrs*</p> <p>Interorganizational query: 1,500 hrs*</p> <p>Distributed multi-source access/query: 1,500 hrs*</p> <p>*Estimates are for items that are not proposed but where public comment is solicited.</p>	
(c)(1) CQM	<p>Level 2</p> <p>100-300 hrs</p> <p>"Unchanged" criterion</p>	<p>Store and incorporate eCQM using HQMF R2: 2,210 hrs*</p> <p>Map HQMF R2 to data in the EHR: 1,680 hrs*</p> <p>Support QRDA II: 1,650 hrs*</p> <p>Additional supplemental data elements: 1,120 hrs*</p> <p>*Estimates are for items that are not proposed but where public comment is solicited.</p>	<p>The items for which ONC solicits public comment represent a significant development investment.</p> <p><i>Note – Estimators indicated that estimates for "Store and incorporate eCQM using HQMF" required higher estimates than were supported in our survey scale, so numbers given are likely under-estimated due to that limitation.</i></p>
(c)(4) CQM	<p>Level 3</p> <p>300-400 hrs</p> <p>"New" criterion</p>	<p>Patient population filtering: 1,580 hrs</p>	<p>The ONC estimate is significantly underestimated.</p>
(d)(1) authentication	<p>Level 2</p> <p>100-300 hrs</p> <p>"Unchanged" criterion</p>	<p>Two factor authentication: 1,270 hrs*</p> <p>*Estimates are for items that are not proposed but where public comment is solicited.</p>	
(d)(2) audit	<p>Level 1</p> <p>40-100 hrs</p> <p>"Revised" criterion</p>	<p>Prevent disabling of audit log through EHR: 500 hrs</p>	<p>The ONC estimate is significantly underestimated.</p>
(e)(1) VDT	<p>Level 2</p> <p>100-300 hrs</p> <p>"Revised" criterion</p>	<p>Updated CCDA R2 from Sept 2013: 910 hrs</p> <p>Download human readable only, CCDA only, or both if desired: 380 hrs</p> <p>Decouple content and transport: 860 hrs</p> <p>Add UDI to CCDA: 380 hrs</p> <p>Add addressee of transmit and whether transmission was successful to activity history log: 680 hrs</p> <p>Adopt Level AA conformance</p>	<p>The ONC estimate is significantly underestimated.</p> <p><i>Statistical comments:</i></p> <p><i>Note – Estimators indicated that estimates for "Patients VDT DICOM images" required higher estimates than were supported in our survey scale, so numbers given are likely under-estimated due to that limitation.</i></p> <p><i>Supporting OpenNotes was estimated as small by half of estimators and large or jumbo by half of estimators, indicating variation amongst EHR developers.</i></p>

		<p>with WCAG 2.0: 1,060 hrs</p> <p>Patients VDT DICOM images: 2,210 hrs*</p> <p>VDT for other data such as waveforms: 2,140 hrs*</p> <p>Support OpenNotes: 1,060hrs*</p> <p>*Estimates are for items that are not proposed but where public comment is solicited.</p>	
(e)(2) clinical summary	<p>Level 1</p> <p>40-100 hrs</p> <p>“Revised” criterion</p>	<p>CVX for immunizations: 550 hrs</p> <p>Updated CCDA R2 from Sept 2013: 860 hrs</p> <p>Include UDI in CCDA: 380 hrs</p> <p>Diagnostic tests pending and future scheduled tests use LOINC: 1,032 hrs</p> <p>EHRs limit data to just one visit: 470 hrs</p>	The ONC estimate is significantly underestimated.
(f)(2) immunization transmission	<p>Level 1</p> <p>40-100 hrs</p> <p>“Revised” criterion</p>	<p>Require HL7 2.5.1. IG R1.5: 1,040 hrs</p> <p>Bidirectional immunization data exchange: 1,380 hrs*</p> <p>NDC instead of CVX for historical immunizations: 1,210 hrs*</p> <p>NDC instead of CVX for immunization with NDC-like code for historical: 920 hrs*</p> <p>*Estimates are for items that are not proposed but where public comment is solicited.</p>	<p>The ONC estimate is significantly underestimated.</p> <p>The items for which ONC solicits public comment represent a significant development investment.</p>
(f)(3) syndromic surveillance	<p>Level 2</p> <p>100-300 hrs</p> <p>“Revised” criterion</p>	<p>QueryHealth for syndromic surveillance: 1,800 hrs</p> <p>QRDA III for syndromic surveillance in ambulatory: not estimated</p> <p>QRDA I for syndromic surveillance in ambulatory: 1,790 hrs*</p> <p>*Estimates are for items that are not proposed but where public comment is solicited.</p>	<p>The ONC estimate is significantly underestimated.</p> <p>The items for which ONC solicits public comment represent a significant development investment.</p>
(f)(4) reportable lab results	<p>Level 1</p> <p>40-100 hrs</p> <p>“Revised” criterion</p>	<p>HL7 2.5.1 IG ELR DSTU R2: 770 hrs</p>	The ONC estimate is significantly underestimated.
(f)(6) cancer transmission	<p>Level 1</p> <p>40-100 hrs</p> <p>“Revised” criterion</p>	<p>IG for ambulatory reporting to central cancer registries, HL7 CDA R1.1: 1,110 hrs</p>	The ONC estimate is significantly underestimated.

(g)(5) non-percentage based measure calculation	Level 3 300-400 hrs "New" criterion	Option 1 - Record evidence each time the following are used (DDI or DAI, CDS, patient lists, transmission to immunization registries, transmission to syndromic surveillance, transmission of reportable labs, transmission to cancer registries): 7,000 hrs Option 2 - Record evidence of use at the beginning, during, and end of the reporting period for each of the following: (DDI or DAI, CDS, patient lists, transmission to immunization registries, transmission to syndromic surveillance, transmission of reportable labs, transmission to cancer registries): 7,000 hrs More detailed split: DDI/DAI: 920 hrs CDS: 1,150 hrs Pt list: 920 hrs Imm reg: 1,040 hrs Syn sur: 1,040 hrs Rep labs: 1,040 hrs Cancer reg: 920 hrs	The ONC estimate is significantly underestimated.
(h)(1) transmit	Level 1 40-100 hrs "New" criterion	470 hrs	
(h)(2) transmit XDR/XDM	Level 1 40-100 hrs "New" criterion	320 hrs	
(h)(3) transmit SOAP	Level 1 40-100 hrs "New" criterion	320 hrs	
(h)(4) transmit delivery notification	Level 2 100-300 hrs "New" criterion	1,070 hrs	The ONC estimate is significantly underestimated.
2017 – disability status	No estimates	Capture disability status using HS section 4302 survey: 1,160 hrs	
2017 – sexual orientation	No estimates	920 hrs	
2017 – gender identity	No estimates	920 hrs	

2017 – veteran status	No estimates	Capture veteran status, dates of service, locales of service: 1,040 hrs	
2017 – occupation status	No estimates	Capture occupation status using NOISH and ODH: 1,160 hrs	
2017 – medication allergy coding	No estimates	1,120 hrs	
2017 – query a provider directory	No estimates	1,210 hrs	
2017 – metric standard for liquid oral meds	No estimates	920 hrs	
2017 – medication history via pharmacy networks or repositories	No estimates	1,210 hrs	
2017 – blue button plus	No estimates	1,520 hrs	
2017 – 2D barcoding	No estimates	1, 740 hrs	
2017 – bulk print information on groups by location	No estimates	1,640 hrs	