

Electronic Health Record Reporting Program

Request for Public Feedback on Draft Developer-Reported Measures for the Electronic Health Record Reporting Program

July 2021

By September 14, 2021, please submit feedback on these draft developer measures to EHRfeedback@urban.org. Visit the [EHR Reporting Program](#) project page for additional information on the program.

Program Overview

The 21st Century Cures Act (Cures Act) directed the US Department of Health and Human Services to establish the [Electronic Health Record \(EHR\) Reporting Program](#). The Office of the National Coordinator for Health Information Technology (ONC) has contracted with the Urban Institute, and its subcontractor, HealthTech Solutions, to develop the program. The EHR Reporting Program was intended to reflect voluntary end users' and developers' reporting of comparative information on certified health IT.

As of this writing, Urban and HealthTech Solutions have [published voluntary user measures](#) for the EHR Reporting Program. These measures provide publicly available, comparative information on certified health information technology (IT) products to inform health IT users' purchasing and implementation decisions. These measures focus on the domains identified under the Cures Act—interoperability, usability and user-centered design, privacy and security, conformance to certification standards—and other categories as appropriate to evaluate the performance of certified health IT. The user-reported criteria were based on stakeholder engagement from August 2018 to January 2020, as well as public feedback, and were posted October 13, 2020. ONC does not plan to implement these voluntary user-reported measures at this time.

The EHR Reporting Program is now identifying measures that certified health IT developers will be required to report on as a condition of maintaining certification under the ONC Health IT Certification Program. The purpose of these developer measures is to address information gaps in the health IT marketplace and provide insights on how certified health IT is being used. For the initial measures, ONC is focusing on interoperability, with an emphasis on patient access, public health information exchange, clinical care information exchange, and standards adoption and conformance.

The approach for selecting measures considers the following:

- measures of priority interoperability functions
- a set of measures and measure concepts that are incremental to start and can evolve and expand to other measure categories in future iterations of the Conditions and Maintenance of Certification requirements under the ONC Health IT Certification Program
- relevance to ONC policy priorities and broader stakeholder interests
- whether the value of the measures is net greater than the burden for collecting the measures
- measures that cannot be obtained without regulation
- efforts that are not duplicative of other data collection
- a focus on measures developers can report on at a product level and across their customer base(s)
- measures that can be trended

Approach

The Urban Institute and HealthTech Solutions developed draft measures to yield high-value information. The draft measures are based on ONC priorities, stakeholder feedback, and expert review. Specifically, the draft measures draw on the following sources:

- a review of existing measures, related literature, and potential data processes to collect information from developers
- market research activities, including expert interviews
- extensive literature and product reviews, including materials from ONC
- targeted stakeholder discussions with certified health IT developers and individuals with measurement or technology expertise

In addition, ONC and additional health IT measurement experts provided feedback and revisions to inform the draft developer-reported measures.

Measures

The measures described below focus on interoperability and cover patient access, public health information exchange, clinical care information exchange, and standards adoption and conformance. For each proposed draft measure, information is included on the rationale for selecting the measure, potential numerators and denominators, reporting elements and format, and key topics for feedback. Some measures are also listed that could be considered for future iterations of the Conditions and Maintenance of Certification requirements under the ONC Health IT Certification Program. In addition, we list data and other measures that were considered but ultimately ruled out for various reasons (e.g., lower-priority measures and measures mentioned in the most recent round of subject matter expert discussions that have yet to be explored).

We also welcome any feedback on the following cross-cutting topics:

- **Frequency of reporting.** Should developers report data on a quarterly, biannual, or annual basis?
- **Level of reporting.** We envision these measures to be reported at the developer level (across customer bases) instead of at the product level to minimize data collection burden. However, we acknowledge that data reporting and interpretation at the developer level is complicated by the bundling and customization of various health IT products. Which level of reporting is most appropriate (e.g., client, product, or developer level)?
- **Data granularity and distribution of results.** The proposed measures focus on overall counts, means, and ratios aggregated at the developer level. However, in many instances, we propose that developers report results by subgroups of interest (e.g., state, demographic characteristics, provider setting). Distributional estimates (e.g., ranges, medians, standard deviations, and quartile, quintile, and decile distributions) may also be of interest. If feasible, we request that developers report at the most granular level possible without exposing protected health information. In other words, we are seeking feedback to help address the following questions:
 - » Are proposed subgroups appropriate (e.g., demographic characteristics, provider setting)?

- » What are the implications of including measures that require data from developers' customers (e.g., reporting by characteristics)?
 - » Should reporting consist of distributional estimates, which show variation by developer, or a single value per developer?
- **Appropriateness of the look-back period.** For example, the denominator for several measures described below is the number of individuals with an encounter, which is intended to capture all active patients. We are seeking feedback on whether the look-back period for active patients should be the past 12 months (or calendar year) or some longer time frame (e.g., past 18 or 24 months) that would capture those who use care less frequently.
 - **Clarity of definitions and measurement.** We are particularly interested in feedback on measuring standards usage and on adding more precision to definitions or concepts that might be ambiguous.
 - **Benefit of measures relative to the burden of collecting the data.** How feasible is it for developers to access, analyze, and report data, particularly for subgroups? If not feasible today, what could be feasible within several years (the time frame for data collection)? Our goal is to create high-value measures, where benefits outweigh the collection burden.
 - » Are developers already collecting this kind of data for any of the mentioned subgroups and estimates?
 - » If the measure is implemented as proposed, what is the estimated level of effort required for developers to report on the measure at an aggregated level?
 - **How to address potential interpretation challenges.** Some measures might not be completely within a developer's control and can be influenced by local market conditions or customer and provider characteristics. Volume-based measures can also be difficult to interpret, because more is not necessarily better. We considered these limitations while developing our measures, but we welcome additional feedback in this area.
 - **Is there any potential burden on users of certified health IT?** Would reporting unduly disadvantage small or start-up developers?
 - **What is the value of the measure to provide insights on interoperability, including to multiple stakeholders?**

As requested, please submit feedback on the draft developer measures listed below to EHRfeedback@urban.org by September 14, 2021.

Measurement Domain: Patient Access

This domain aims to assess the implementation of health IT provisions of the Cures Act by providing insight regarding whether patients are (1) electronically accessing data and (2) taking advantage of third-party applications (apps) to do so. This is important because patients' access to their data can increase patient engagement and improve health outcomes. Currently, ONC only has insights into patient-facing third-party apps in the public galleries, which likely represent a subset of all apps. ONC and the Office for Civil Rights also have limited information on the usage (authorization) of those apps to help guide privacy policies. The proposed draft measures in this domain aim to address the following questions:

- How are patients accessing their health information electronically (i.e., patient portals and third-party apps)? To what extent is usage sustained by method?
- To what extent are patient-facing apps registered via the certification criteria in section (g)(10) (under the Health IT Certification Program) being used? How many apps have sustained usage (versus drop-off after download)?
- To what extent do registered third-party patient-facing apps include comprehensive, publicly available privacy policies?

TABLE 1

Proposed Draft Measures, Patient Access

Applies to certification criteria (e)(1) and (g)(10)

Measures	Reporting elements and format
<p>1. Patient access to electronic health information: Percentage of patients who access their electronic health information using different methods and continue using those methods</p> <p>Num 1: Number of patients that accessed their electronic health information</p> <p>1a. Via third-party app only (authorization as a proxy for use)</p> <p>1b. Via patient portal or app given by health care provider for portal use only</p> <p>1c. Combination of third-party app and web portal (e.g., third-party app, web portal, and/or health care provider app)</p> <p>1d. Neither (did not use patient portal or authorize access via an app)</p> <p>Num 2: Number of patients that accessed their data <i>more than once</i> (i.e., sustained use) by method listed above</p> <p>Den: Number of individuals with an encounter (i.e., active patients)</p>	<p>Report the following overall and by patient characteristics from EHR:</p> <ul style="list-style-type: none"> ▪ age group ▪ patient versus caregiver ▪ race and ethnicity <p>Require developers to report numerators and denominators, not just percentages</p> <p>Aggregated by developer</p> <p>Frequency of reporting and look-back period for numerators and denominators to be determined</p>

Measures	Reporting elements and format
<p>2. Sustained usage: Percentage of third-party, registered patient-facing apps with a minimum number of users (i.e., patients who have authorized access to their EHR data) and extent to which those apps continue to be used</p> <p>Num 1: Number of third-party, registered patient-facing apps with a minimum number of patients who authorized access to their data (by category)</p> <p>Num 2: Number of third-party, registered patient-facing apps where majority of users (>50%) did NOT reauthorize app within a given time frame (by categories listed in num 1)</p> <p>Den: Number of third-party patient-facing apps registered via § 170.315(g)(10)(III) (Application Registration – Enable an application to register with the Health IT Module’s “authorization server”)</p>	<p>Nums 1 and 2 reported by number of apps with at least 1,000 users, 10,000 users, and 100,000 users</p> <p>Require developers to report numerators and denominators, not just percentages</p> <p>Numerators aggregated by developer</p> <p>Possibility of asking developers to report the actual names of registered apps</p> <p>Frequency of reporting and look-back period for numerators and denominators to be determined</p>
<p>3. Privacy policy: Percentage of third-party, registered patient-facing apps that include a publicly available privacy policy</p> <p>Screening questions: Does the health IT developer collect whether third-party patient-facing apps have a publicly available privacy policy as part of the registration process? If yes, proceed to report on num 1.</p> <p>Num 1: Number of registered, third-party patient-facing apps that include a publicly available privacy policy</p> <p>Num 2: Number of registered, third-party patient-facing apps that include a publicly available privacy policy that aligns with five elements described in the Cures Act: Interoperability, Information Blocking, and the ONC Health IT Certification Program rule^a</p> <p>Den: Number of patient-facing apps registered via § 170.315(g)(10)(III) (Application Registration – Enable an application to register with the Health IT Module’s “authorization server”)</p>	<p>Require developers to report on screening question. If able to answer screening question, require developers to report numerators and denominators, not just percentages</p> <p>Aggregated by developer</p> <p>For num 2, option to include “do not know.” Num 2 could also be proposed as a future measure</p> <p>Frequency of reporting and look-back period for numerators and denominators to be determined</p>

^a See [21st Century Cures Act: Interoperability, Information Blocking, and the ONC Health IT Certification Program](#), 85 Fed. Reg. 25642 (2020).

In addition to any relevant cross-cutting feedback, the Urban/HealthTech Solutions team is also seeking the following targeted feedback on the patient access measures:

- What are the appropriate categories for the number of users and reauthorized users?
- Does assessing whether patients accessed their data more than once during the calendar year (i.e., sustained use) provide valuable insights beyond looking at access by method? Similarly, does looking at the number of apps that were not reauthorized by a majority of users provide useful insights into what apps are valued?

- What is the appropriate threshold for the number of times a patient should access their data within 12 months to be considered sustained use? Is 12 months appropriate for the reauthorization measure, or should the look-back period be longer (e.g., 18 months)?
- By which patient characteristics should we collect the measures? Would EHR developers have access to data reflecting these characteristics? If so, are the data (e.g., related to race and ethnicity) from EHRs reliable for reporting?
 - » The currently proposed characteristics are age group, patient versus caregiver, and race and ethnicity.

Measurement Domain: Public Health Information Exchange

Coordination between providers and public health agencies is critical during a pandemic or other public health emergency. The proposed draft measures in the public health domain could help ONC assess the public health capabilities of health IT, beyond the Centers for Medicare & Medicaid Services performance improvement projects' measurement of "active engagement." These types of data are not typically available to public health agencies or the Centers for Disease Control and Prevention. Overall, the proposed public health measures seek to provide insights into how frequently providers are using their certified health IT to send and receive public health information to and from public health agencies.

TABLE 2

Proposed Draft Measures, Public Health Information Exchange

Applies to certification criteria (f)(1)

Measures	Reporting elements and format
<p>1. Vaccinations/immunizations: Percentage of vaccinated individuals whose immunization data were sent electronically to an immunization information system (IIS)</p> <p>Num: Number of individuals whose immunization information was electronically submitted to the registry (e.g., via HL7v2.5.1 transactions)</p> <p>Den: Number of individuals with an immunization administered</p>	<p>For each measure, gather numerator and denominator counts by the following:</p> <ul style="list-style-type: none"> ▪ state ▪ state and setting (inpatient versus outpatient) ▪ state and age group (adults, adolescents, children/infants) <p>Collect numerator and denominator counts but report out as percentages by specified subgroups</p> <p>EHR developer would need to construct the measure at the client level then roll up into aggregated groups</p>
<p>2. Immunization forecasts: Percentage of IIS queries made per individual with an encounter</p> <p>Num: Number of immunization forecasts and histories received from IIS into EHR</p> <p>Den: Number of individuals with an encounter</p>	<p>Quintiles may not be of value for these measures because they would (1) provide only variation within developers that would not be comparable across developers and (2) result in reporting of many estimates by state and subgroup that may be burdensome to generate</p> <p>Frequency of reporting (e.g., annually) and look-back period (e.g., in the past calendar year) for numerators and denominators to be determined</p>

In addition to any relevant cross-cutting feedback, the Urban/HealthTech Solutions team is also seeking the following targeted feedback on the public health information exchange measures:

- Which individual characteristics should we collect the measures by? Would health IT developers have access to data on these patient characteristics (e.g., age)?
- Queries via portals would be excluded from measure 2. To what extent is this a limitation?
- For measure 2, should the denominator be encounters, evaluation and management visits, or vaccinated individuals?

Measurement Domain: Clinical Care Information Exchange

Measures of clinical care information exchange can provide insight into whether users are using certified health IT to view and use data received from external sources and whether and how clinician-facing apps are used. These proposed draft measures aim to address the following questions:

- Use of clinical data received from an external source
 - » Are clinical data received via certified health IT being used and viewed?

- » Of the total number of unique summary-of-care records received using certified health IT, how many were parsed and integrated and then viewed by end users or clinicians?
- Usage of clinician-facing third-party apps
 - » How many clinician-facing apps are registered via certification (g)(10), and to what extent are these apps used?

TABLE 3
Proposed Draft Measures, Clinical Care Information Exchange
Applies to certification criteria (b)(1), (b)(2), and (g)(10)

Measures	Reporting elements and format
<p><u>1. Summary-of-care records:</u> Percentage of summary-of-care records viewed by end users and clinicians (broken out by parsing/integration of records)</p> <p>Num 1: Number of unique summary-of-care records received using certified health IT that are viewed by end users and clinicians</p> <p>Den 1: Number of unique summary-of-care records received using certified health IT</p> <p>Num 2: Number of unique summary-of-care records received using certified health IT that are parsed, integrated, and viewed by end users and clinicians</p> <p>Den 2: Number of unique summary-of-care records received using certified health IT that are parsed and integrated</p>	<p>Viewing rates may differ based on whether data are integrated</p> <p>Consider one denominator with multiple numerators to capture total number of records and then those that were parsed and integrated</p> <p>Require developers to report numerators and denominators, not just percentages</p> <p>For each measure, collect numerator and denominator counts by setting (e.g., inpatient, outpatient)</p> <p>Aggregated by developer</p> <p>Frequency of reporting and look-back period for numerators and denominators to be determined</p>
<p><u>2. Clinician-facing apps:</u> Percentage of registered, third-party clinician-facing apps with active users (as defined by end users and clinicians authorizing access)</p> <p>Num 1: Number of registered, third-party clinician-facing apps with a minimum number of users (see potential categories/subgroups)</p> <p>Other potential numerators: Average number of apps deployed by customer or average number of apps by product</p> <p>Den: Count of third-party clinician-facing apps registered via § 170.315(g)(10)(III)</p>	<p>Authorization of the app is a proxy for usage</p> <p>Potential numerator categories for users: by average number of end users/clinicians using each app across a developer; number of users (e.g., at least 1, 10, 100, 10,000, or 100,000)</p> <p>Require developers to report numerators and denominators, not just percentages</p> <p>Aggregated by developer</p> <p>Frequency of reporting and look-back period for numerators and denominators to be determined</p>

In addition to any relevant cross-cutting feedback, the Urban/HealthTech Solutions team is also seeking the following targeted feedback on the clinical care information exchange measures:

- How should we define end users and clinicians?
- For measure 1:
 - » To what extent are these data recorded in activity logs the health IT developer can access?
 - » What challenges exist because of varying workflows in the viewing of summary-of-care records?
 - » Are there concerns that duplicates would be counted if we do not collect “unique” summary-of-care records received?
- For measure 2:
 - » How should usage of clinician-facing apps be measured? Do clinicians need to authorize third-party apps?
 - » What categories should be selected for a minimum number of users to provide variation and comparability across developers? Should multiple categories be selected or just one minimum (e.g., 10 users)?
 - » Should other numerators be considered (e.g., number of apps deployed by customer and/or product)? Do these provide additional insights of value?

Measurement Domain: Standards Adoption and Conformance

Measures in this domain can provide insight into progress toward interoperability and exchange, which can ultimately influence patient care, public health coordination, and other aspects of the health care system. The proposed draft measures in this final domain provide information on the use of Fast Healthcare Interoperability Resources (FHIR) profiles, which can help guide updates to the US Core Data for Interoperability (hereafter “Core”). They also provide insights into the volume and types of data used by app users. These measures can help ONC assess the implementation of health IT Cures Act provisions by providing insight into the usage of bulk FHIR calls overall and for different use cases.

These proposed draft measures aim to address the following questions:

- What FHIR Core and non-Core profiles are requested by providers and consumers when using apps?
- How frequently are bulk FHIR transactions occurring overall and by type?

TABLE 4

Proposed Draft Measures, Standards Adoption and Conformance*Applies to certification criteria (g)(10)*

Measures	Reporting elements and format
<p>1. Requests for FHIR profiles by clinician-facing applications: Number and percentage (relative share) of calls for individual Core and non-Core FHIR profiles</p> <p>Num: Number of calls by clinician-facing registered apps for each distinct FHIR profile (both Core and non-Core FHIR profiles)</p> <p>Den 1: Number of active patients associated with an FHIR call (alternative: total number of active patients)</p> <p>Den 2: Number of clinician-facing third-party apps registered via § 170.315(g)(10)(III) with a minimum number of users (see clinical exchange measure 2 in table 3)</p>	<p>The reported data could be used in combination to create a range of measures that provide indications of the adoption and use of FHIR and associated insight into the relative use of Core elements</p> <p>EHR developer would need to capture the data elements at the client level then roll up into aggregated groups</p> <p>Normalization of call frequency would be needed to control for bulk FHIR and automatic refresh calls</p> <p>More than one denominator is appropriate to provide insight into (a) the relative share and frequency for individual FHIR Core profile calls amortized over the number of applications in use and (b) the relative share and frequency for individual Core profile calls as a percentage of aggregate calls being made</p>
<p>2. Requests for FHIR profiles by patient-facing applications: Percentage (relative share) of calls for individual Core and non-Core FHIR profiles</p> <p>Num: Number of calls by clinician-facing apps for each FHIR profile (both Core and non-Core FHIR profiles)</p> <p>Den 1: Number of active patients associated with an FHIR call (alternative: total number of active patients)</p> <p>Den 2: Count of patient-facing third-party apps registered via § 170.315(g)(10)(III) with a minimum number of users (see patient access measure 2)</p>	<p>These measures can be reported as counts and distributions, including within quintiles (across clients)</p> <p>Require developers to report numerators and denominators, not just percentages</p> <p>Frequency of reporting and look-back period for numerators and denominators to be determined</p>
<p>3. Number of calls using SMART/HL-7 FHIR bulk data access: Usage of SMART/HL7 FHIR bulk data access to enable data export in enterprise-to-enterprise transactions^a</p> <p>Num 1: Number of SMART/HL-7 FHIR bulk calls across EHR installations</p> <p>Num 2: Number of SMART/HL-7 FHIR bulk calls related to export data on all individuals across EHR installations</p> <p>Num 3: SMART/HL-7 FHIR bulk calls related to export of all data for individuals within a specified group (e.g., accountable care cohort, research group, health plan members)</p> <p>Num 4: Number of SMART/HL-7 FHIR bulk calls related to full system-level export of all resources</p> <p>Den: Number of distinct EHR installations</p>	<p>EHR developer would need to construct the measure at the client level then aggregate</p> <p>The functionality to measure this is not currently available</p> <p>The numerator could be artificially inflated because of technical or configuration factors</p> <p>These measures can be reported as counts and distributions, including within quintiles</p> <p>Frequency of reporting and look back-period for numerators and denominators to be determined</p>

^a Kenneth D. Mandl, Daniel Gottlieb, Joshua C. Mandel, Vladimir Ignatov, Raheel Sayeed, Grahame Grieve, James Jones, Alyssa Ellis, and Adam Culbertson, "Push Button Population Health: The SMART/HL7 FHIR Bulk Data Access Application Programming Interface" *npj Digital Medicine* 3, no. 151 (2020), <https://doi.org/10.1038/s41746-020-00358-4>.

In addition to any relevant cross-cutting feedback, the Urban/HealthTech Solutions team is also seeking the following targeted feedback on the standards adoption and conformance measures:

- To what extent do bulk and automatic refresh calls distort the ability to interpret these measures?
- Does the frequency of calls for specific profiles depend on what an application is programmed to do and not necessarily reflect the action of a clinician or patient?
- Do specific EHR technologies make all FHIR resources available?
- Would it be useful to refine bulk FHIR transactions to groups or population exports as well as all data exports?
- What are the appropriate thresholds for the numbers of patient and clinician users?

Potential Future Measures

We also seek feedback on the following two forward-looking measures for potential future data collection efforts. These measures fall into the existing patient access and public health domains and a new potential measurement domain related to data quality and completeness.

TABLE 5
Potential Future Measures

Measure	Reporting elements and format	Questions
<p><u>Patient access measure:</u> Percentage of patients using write-back functionality on third-party, registered patient-facing apps</p> <p>Num: Number of patients who have used write-back functionality on third-party, registered patient-facing apps</p> <p>Den: Number of patients who have authorized access to their information via third-party apps (this number is also collected via numerator from patient access measure 1)</p>	<p>We considered an app-level measure as well:</p> <p>Num: Number of patient-facing apps where write-back is used by a minimum number of users (see categories in patient access measure 2)</p> <p>Den: Number of patient-facing apps with a minimum number of users (see categories in patient access measure 2)</p> <p>The concern is that apps can have vastly different numbers of users, so could skew the overall picture of how many patients are using write-back</p>	<p>How can we better define scope and specificity around write-back? Should it exclude scheduling and administrative matters?</p> <p>If we see very little usage, is it because the application programming interface (API) was not enabled to allow patient write-back, or because patients are not doing it? How can we differentiate or measure this, looking at apps/APIs that support write-back?</p> <p>Do we expect more developers will have write-back on proprietary APIs?</p> <p>We understand many <i>clinicians</i> use write-back on proprietary APIs. Should we try to capture that, too?</p>

Measure	Reporting elements and format	Questions
<p>Public health measure: Submission of data to public health authorities via third-party apps or APIs</p> <p>Num: Number of EHR installations submitting data to public health authorities using APIs or third-party apps (e.g., eCR Now) related to (f) criteria:</p> <ul style="list-style-type: none"> ▪ immunizations (f)(1) ▪ reportable labs (f)(3) ▪ syndromic surveillance (f)(2) ▪ electronic case reports (f)(5) ▪ antimicrobial use and resistance reporting (f)(6) <p>Den: Number of health IT installations</p>	<p>Gather numerator and denominator counts by the following:</p> <ul style="list-style-type: none"> ▪ state ▪ state and setting ▪ state and age group for immunizations only (adults, adolescents, child/infant) 	<p>Forward-looking measure? The only FHIR API that exists now is one for electronic case reporting.</p> <p>Should we ask about APIs broadly (both Simple Object Access Protocol, or SOAP, and FHIR) or FHIR only?</p>
<p>Data quality and completeness measure: By data element, percentage of data complete (i.e., not missing)</p> <p>Num: For each data element selected, number of active patients with complete information for that data element</p> <p>Den: Number of individuals with an encounter (i.e., active patients)</p>	<p>Data elements for consideration: race/ethnicity, date of birth, gender, address, mother's maiden name, first name, last name. Others?</p> <p>Require developers to report numerators and denominators, not just percentages</p> <p>Aggregated by developer</p> <p>Potential subgroup by client (reported by quintiles)</p> <p>Frequency of reporting and look-back period for numerators and denominators to be determined</p>	<p>To what extent do the provider/client processes drive the capture of these data?</p> <p>Should distinctions be made between data captured within a system/organization and those from external sources?</p> <p>To what extent do regional/local characteristics for information exchange affect this measure?</p> <p>Could duplicate measures be counted and distort this measure?</p> <p>To what extent does the use of third-party applications/middleware shape the performance relative to this measure?</p>

Other Measures Considered

Throughout the project, we considered but ultimately excluded many additional measures. These measures were excluded for various reasons (e.g., because of data collection burden, lower priority relative to other measures, or being proposed late in the process). Examples of these other measures that we considered are listed below by domain.

Public health:

- “write” measures (e.g., number of patients for whom there was a write-back, electronic case reporting, electronic lab reporting, or immunization)
- how long it took the EHR vendor to onboard to the immunization information system
- number of registries the EHR is connected to
- percentage of patients who had information (outside immunizations) sent to a public health agency (e.g., registry reporting, syndromic surveillance, case reporting, electronic lab reporting)
- bulk export FHIR for public health reporting
- number or percentage of patients with available social determinants of health data
- percentage of immunization gaps addressed

Clinical care information exchange:

- connection to national networks
- time-to-implementation to onboard to a new national network
- percentage of referral or transition summaries viewed by clinicians
- percentage of external data (e.g., labs, immunizations) incorporated in the EHR
- percentage of clients who can view an integrated encounter list
- percentage of clients who can view an integrated medication list
- percentage of emergency department notifications viewed by clinicians or clinical staff
- percentage of emergency department notifications that resulted in some type of follow-up with the patient by clinicians or clinical staff
- percentage of discharge summaries viewed by clinicians or clinical staff
- percentage of discharge summaries that resulted in some type of follow-up with the patient by clinicians or clinical staff
- percentage of patient matches accepted into the system for query requests to external providers to return specific patient health information

Standards adoption and conformance:

- FHIR-based versus proprietary clinician-facing third-party apps registered to certified application programming interface (API) technology
- FHIR-based versus proprietary patient-facing third-party apps registered to certified API technology
- use of structured data within document-based exchange, as measured by C-CDA Scorecard results across EHR installations
- number of applications a developer has registered
- number of conformance errors in the C-CDA
- use of FHIR APIs in the draft Core but not yet final (for both patient- and provider-facing APIs)
- percentage of records sent via C-CDA versus FHIR

Next Steps

These draft developer measures will be refined based on public feedback and recommendations from the [Health IT Advisory Committee](#). The public feedback period ends on September 14, 2021. In December 2021, the Urban and HealthTech Solutions team will deliver a revised set of developer-reported measures to ONC.

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