# Introduction to Electronic Case Reporting (eCR) – For EHR and Health IT Vendors

*Last Updated: 8/17/2022*

The below transcript is intended for use in conjunction with a video file, available at [EHR Implementers (aimsplatform.org)](#) within the Overview section.

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Hello – and thank you for taking the time to watch this video to familiarize yourself with the electronic case reporting, or eCR, key concepts, terms, and acronyms you'll encounter as you embark on your electronic health record or Health IT product's eCR implementation. This recording is intended for representatives of health IT technologies that endeavor to support the eCR requirements. If you are a healthcare organization representative looking to leverage your vendor's functionality to implement eCR, please send an email to *eCR@cdc.gov* for more information.
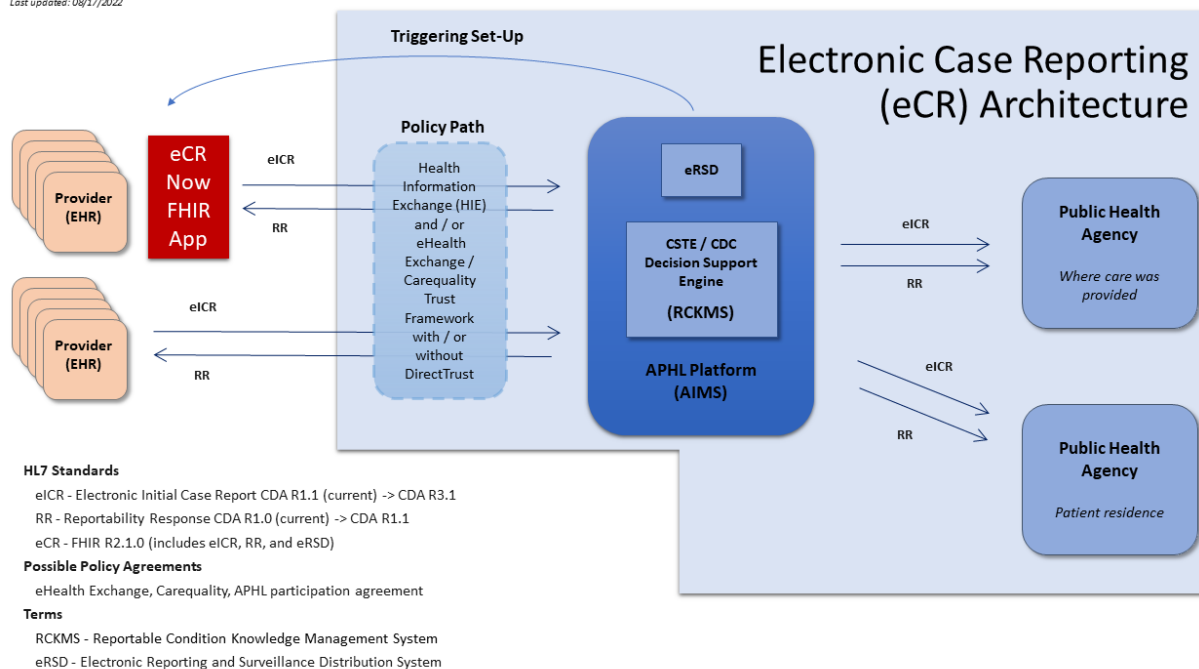


*Figure 1: eCR Architecture Diagram_Without Logos_2022 08 17*

- Public health case reporting is required by law in every state and territory. Here, we are discussing the electronic implementation of case reporting, known as eCR. eCR is the automated generation and transmission of case reports that originate from a Healthcare Organization's Electronic Health Record – or EHR - system and are sent to state and local public health agencies – or PHAs - for review and action.
- eCR is a joint program of the Centers for Disease Control and Prevention (CDC), the Association of Public Health Laboratories (APHL), and the Council of State and Territorial Epidemiologists (CSTE) in support of state, tribal, local, and territorial PHAs.

- There are different requirements for reporting in different jurisdictions, so your customers knowing what, when, where and how to report cases to public health can be difficult for them to keep up with and often results in the underreporting of cases.
- eCR will handle this variation for your customers and help them meet case reporting requirements while decreasing burden on providers and their staff by automatically sending the report in the background of the EHR workflow and reducing the need for follow-up calls.
- In the 2022 and 2023 Centers for Medicare & Medicaid Services (CMS) published Medicare Promoting Interoperability Program final rules, one of them, the Electronic Case Reporting measure is required as part of the Public Health and Clinical Data Exchange Objective for eligible hospitals and critical access hospitals.
- CMS also published the Merit based Incentive Payment System final rule requiring the Electronic Case Reporting measure for eligible clinicians as well.
- Both rules took effect on January 1, 2022 and healthcare organizations can start implementing once their EHR product is approved for general availability with eCR.
- CDC has issued guidance that all PHAs connect to and receive eCR data via a shared services platform, the Association of Public Health Laboratories' Informatics Messaging Services, or AIMS, platform. All States, DC, Puerto Rico, and several local health departments are currently connected to the AIMS platform to receive eCR data.
- Please direct your individual customers to their PHA's website to learn more about a given jurisdiction's Promoting Interoperability requirements.

Now, let's turn our attention to the eCR architecture diagram.

- The diagram displayed here gives an overview of how data flow from the EHR system utilizing the eCR architecture.
- Please note that everything in the light blue box is in production and is in use for tens of thousands of facilities nationwide.

**How eCR works -**

- Each EHR product must first enable functionality to support the eCR workflow via a process we refer to as "EHR eCR onboarding."
- EHR product teams will need to determine how they will enable eCR functionality using one of two options:
    - integrating the eCR Now FHIR App, or
    - via in-house development, referred to as a vendor-developed eCR implementation
- The EHR product will initiate the eCR workflow by using a set of trigger codes that represent health conditions of public health interest. These trigger code value sets are retrieved from the Electronic Reporting and Surveillance Distribution (eRSD) website, and both routine and emergent updates should be expected as new codes are added and deprecated ones removed. The eRSD also articulates the timing parameters that an EHR product should use to evaluate patient data against the value sets.
    - While the value sets and timing parameters should be retrieved and processed via either the JSON or XML payloads on the eRSD website, human-readable explanations of the value sets and timing parameters can also be found on the AIMS eCR website. Links will be provided at the end of this recording.

- For the sake of our overview, we'll imagine now that your product has completed EHR onboarding and the EHR product's eCR solution has been implemented within a healthcare organization's production EHR environment.
- When a clinician is going through their normal workflow and recording data in the EHR, those data are evaluated against the trigger codes in the background. When a match occurs, an electronic initial case report - or eICR - is created and transmitted to the AIMS platform.
  - The eICR is an HL7 payload designed to represent eCR data needs. At the time of this recording, both the FHIR app and vendor-developed implementations generate the STU Release 1.1 Clinical Document Architecture (CDA) version of the eICR payload. In the future, Release 3.1 of the CDA eICR and FHIR payloads will be supported for eCR.
  - Data included in an eICR include patient, demographic and clinical data that's critical for public health activities. These data were identified by a task force of CSTE for a multi-condition, multi-jurisdiction case report.
- Once the eICR is received at AIMS, it is validated and processed using a decision support engine known as the Reportable Conditions Knowledge Management System - or RCKMS. The rules in RCKMS are authored by state, territorial, local and tribal public health epidemiologists and align with the jurisdictional laws that determine reportability.
- RCKMS confirms if the eICR is reportable and sends it to the appropriate public health agency or *agencies* – as a report may be sent to more than one jurisdiction, depending on where care was provided and the patient's residence, which may be different at times.
- Because the rules that determine reportability in RCKMS are managed by state, tribal, local and territorial (STLT) public health epidemiologists, the EHR product team and healthcare organizations need not worry about accounting for jurisdictional variation of reporting rules – in fact, this is a prime benefit of leveraging this "connect once, report to all" architecture to accomplish eCR!

Let's transition now to talking about the **Reportability Response**, or what we refer to as the RR -

- For each case report that is sent from the EHR, a Reportability Response - or RR - is sent back from the AIMS platform. In other words, there should always be a 1-1 ratio of eICRs triggered outbound to RRs received inbound.
- The RR serves three main functions:
  - First, an RR being generated and sent back indicates that reporting was carried out successfully – that the eICR was received and processed by AIMS and RCKMS. The RR will indicate a determination of reportability status for each condition that was included in the eICR and, if found to be reportable, which jurisdiction(s) the eICR was sent to.
  - These data may be used by infection control practitioners or other staff to track reporting that is done for that healthcare organization.
  - The RR can also contain additional information or follow ups from the PHAs about the condition reported - such as additional testing needs, treatment guidance, or isolation and quarantine guidelines. This information is oriented for providers and other clinical staff.
  - Lastly, the RR can contain information on errors and warnings that need to be addressed and should be used by the EHR system administrators for the organization.

You may be wondering how your EHR system should handle RR visualization, given that different functions of the RR apply to different audiences.

***That's brings us to the importance of the Determination of Reportability within the RR.***

While one RR is generated and returned for each eICR, a single eICR may include one or more reportable conditions. Further, based on patient residence and the location of care, conditions may be reportable to more than one PHA.

For each condition included in the eICR and for each relevant PHA, a "Determination of Reportability" data element indicates RCKMS' determination of whether the condition is reportable to public health.

RRs that indicate at least one condition, perhaps multiple conditions, is "Reportable" or "May be reportable" should be attached to patient's chart within the originating EHR system *and* made viewable to the provider of record - for example, by leveraging existing EHR Inbox workflows or an equivalent mechanism. Further details are provided on the AIMS eCR website.

The four possible determination of reportability data element options include:

1. **Reportable,** meaning the information provided meets reporting criteria for an associated PHA,
2. **May be reportable,** meaning the information provided may meet reporting criteria if additional information is provided,
3. Not reportable, and, finally,
4. No rule met.

Note that one benefit of integration with the eCR Now FHIR app is that it performs 'filtering' of RRs so that clinicians only visualize those that reflect at least one condition that was determined to be "Reportable" or "May be reportable." Further details are available for those who elect to integrate with the app.

Other health care staff may need aggregate data visualized about overall health care organization reporting or functioning of eCR.

**Summary of the eCR Architecture Diagram**

- To summarize the eCR workflow, when a provider is going through their normal workflow using the EHR as part of patient care and a match occurs between the data entered and one of the trigger codes loaded in the background of the EHR (or FHIR app, if applicable), an eICR is generated and sent to AIMS.
- AIMS receives, validates, and processes the eICR against the rules authored by the PHAs using a decision support engine called RCKMS to determine whether the case is reportable.
- Finally, an RR is generated and returned to the originating system for every eICR received by AIMS. While an RR is always sent back from AIMS and should be available to a system administrator, the RR being visualized to a clinical end-user should be based on the determination of reportability status that is reflected within the RR.

- eCR operates behind the scenes in EHRs using data collected by clinicians as part of care delivery to identify potential cases, create case reports, confirm reportability through the application of rules, and securely transmit the reports to the appropriate PHA(s).

## Trust Framework/Policy Path

- Now let's bring our attention to the trust framework that needs to be in place between the healthcare organization and the APHL AIMS platform. APHL AIMS acts on behalf of the healthcare organization, or provider, to make appropriate public health disclosures to the PHAs. A trust framework for this can be accomplished in several ways, and we seek to obviate the need for any point-to-point legal agreements wherever possible.
- You will be asked by the eCR onboarding team to complete an EHR/Health IT eCR Onboarding Intake Form where we collect information on which policy paths may be best suited for your company and your customers. There are several options available:
  - **Option 1.** Participate in, or connect to, an organization that is a member of the eHealth Exchange,
  - **Option 2.** Participate in, or connect to, an organization that is a Carequality Implementer,
  - **Option 3.** Participate in, or connect to, an organization that is a member of CommonWell, and,
  - **Option 4.** For organizations unable to use one of the above three options, APHL has an established terms of service agreement ("The Electronic Case Reporting Participation Agreement") for eCR that the EHR companies (preferred) or health care organizations can sign.

## Technical Connection

- The AIMS platform currently supports two technical connectivity options for eCR.
  - The first option is to utilize Direct Secure Messaging via a Health Information Service Provider, or HISP, and the second option is to use XDR via eHealth Exchange HUB.
  - Note that the connection options available to a *particular* EHR or Health IT product - or your customer base - may be constrained based on the combination of existing EHR functionality and business relationships.
- If you intend to use a HISP to connect, please reach out to the HISP contacts as soon as possible to make sure any contracts can account for an increase in message volume. Many HISPs provide flat rate contracts to handle this.

**Next, we will share details about what to expect as you advance your product's eCR readiness.**

# Electronic Health Record Onboarding Process for eCR



| Stage 1: eCR Planning | Stage 2: Development | Stage 3: Product Testing | Stage 4: Initial Implementations | Stage 5: General Availability |
|---|---|---|---|---|
| **eCR team:** <br> ❑ Provides orientation to eCR. <br><br> **EHR product team:** <br> ❑ Understands the eCR use case and requirements. <br> ❑ Decides on implementation approach (integration via the eCR Now FHIR application vs. vendor-developed solution for eCR). <br> ❑ Assigns roles. <br> ❑ Determines preliminary eCR policy path decision. | **EHR product team:** <br> ❑ Makes all major design decisions. <br> ❑ Builds and configures their solution to satisfy eCR requirements, including the eRSD update implementations. <br><br> **eCR team:** <br> ❑ Provides materials to facilitate product team's readiness for testing. <br> ❑ Seeks eCR leadership approval to move to Stage 3. | **EHR product team:** <br> ❑ Completes all test scenarios, iterating as needed. <br> ❑ Drafts customer-facing eCR implementation documents. <br> ❑ Recommends candidate initial implementers. <br><br> **eCR team:** <br> ❑ Reviews test messages, documents issues, and collects vendor timeline for resolution. <br> ❑ Seeks eCR leadership approval to move to Stage 4. <br> ❑ Informs PHAs of initial implementers, once finalized. | **EHR product team:** <br> ❑ Begins testing with HCOs, PHAs, and onboarding team. <br> ❑ Finalizes customer-facing eCR implementation documentation. <br> ❑ Responds to any PHA questions following message review. <br><br> **eCR team:** <br> ❑ Documents issues and anticipated resolution timelines. <br> ❑ Monitors for issues with production data. <br> ❑ Seeks leadership approval to move to Stage 5. | **EHR product team:** <br> ❑ Advertises to customers that eCR solution is now available for onboarding. <br> ❑ Distributes implementation documentation to customers. <br> ❑ Continues to collaborate with eCR team to identify and resolve issues for optimizing case reporting and address subsequent product updates. <br><br> **eCR team:** <br> ❑ Informs PHAs to begin widespread HCO outreach. |

*If needed, return to an earlier stage*

**HCO Onboarding** *\*HCOs continue manual reporting processes until told otherwise by PHA(s)*

Last updated: 7/8/2022 — Onboarding Documentation & Coordination Calls

eCR: electronic case reporting; EHR: electronic health record; eICR: electronic initial case report; eRSD: electronic reporting and surveillance distribution; FHIR: Fast Healthcare Interoperability Resources, HCO: healthcare organizations; PHA: public health agency
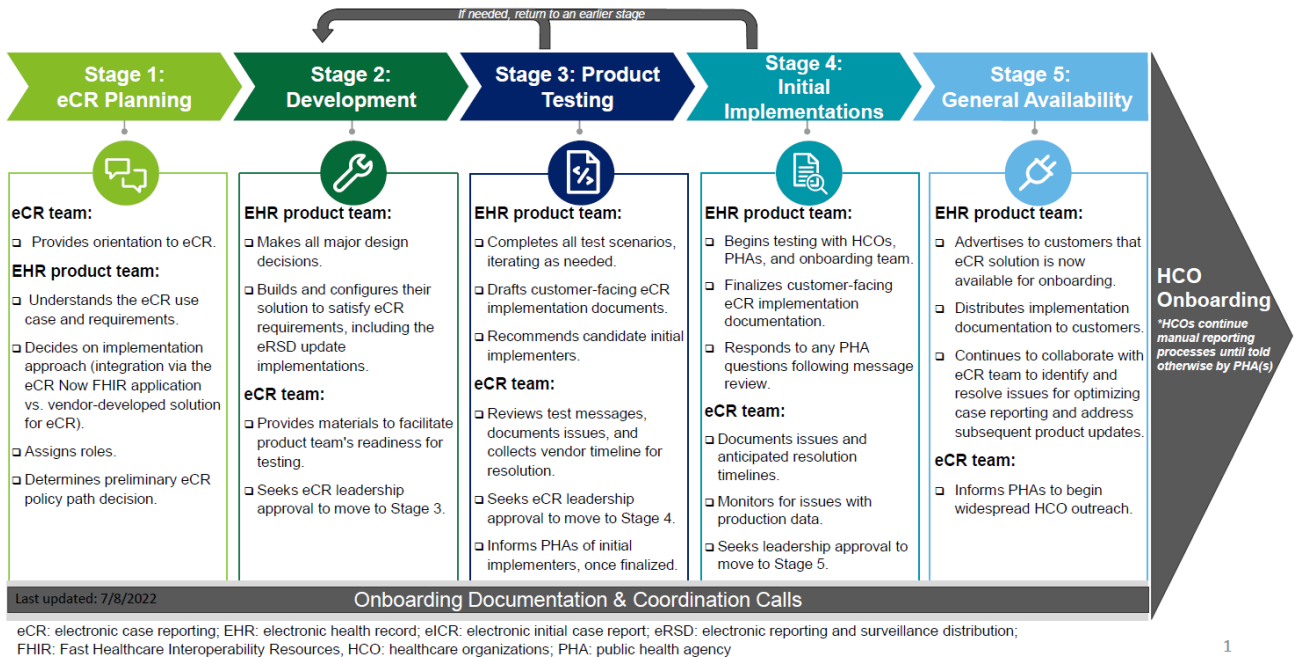
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*Figure 2: The EHR eCR Onboarding Process.*

The EHR onboarding process for eCR is broken down into five stages, beginning with eCR planning and ending with your product being approved for eCR general availability.

While the exact scope and time spent in each stage will depend on if you elect to integrate the eCR Now FHIR App or pursue a vendor-developed implementation, the readiness of coded data in your product, and adherence to testing procedures, you should expect to work through these five stages:

1.  **Stage 1: eCR planning –** The EHR product team is oriented to the eCR use case and requirements to decide on integrating via the eCR Now FHIR app or pursuing a vendor-developed solution for eCR. The product team will also assign roles and determine the preliminary eCR policy path (or paths) that may be suitable for your product and customers.
2.  **Stage 2: Development –** This stage includes all major design decisions. The EHR product team builds and configures their solution to satisfy eCR requirements, including functionality to accommodate future eRSD updates. Product teams will be asked to consolidate this information into a written design document, which will be submitted, reviewed, and then approved by eCR leadership. Upon approval to proceed, we will provide you with the eICR test scenarios and instructions to facilitate your product testing.
3.  **Stage 3: Product testing –** During this stage, the EHR product team conducts testing. Product-specific issues are documented and vendor timelines for resolution are established. The EHR product team will draft customer-facing eCR implementation documentation. Candidate initial implementers are recommended by the EHR product team, and the exact number of initial implementers will be determined during this stage. Initial implementers will then be finalized in

conjunction with the eCR team and applicable PHAs. The EHR product team must obtain formal approval prior to proceeding to the next stage. The eCR team will share additional information regarding expectations and processes pertinent to your HCO customers at that time.

4. **Stage 4: Initial implementations –** Stage 4 marks the beginning of the EHR product being tested with a small number of your healthcare organization customers and their corresponding PHAs. All issues are documented in conjunction with the EHR product team as well as identifying a timeline for resolving any new issues. The EHR product team finalizes customer-facing eCR implementation documentation. PHAs will review test eICRs. Monitoring will occur to identify issues with production data. Initial implementation will be reviewed and approved by eCR leadership. The EHR product team must obtain formal approval prior to proceeding to stage 5.

5. **Stage 5: General availability –** The product is now ready for routine HCO eCR onboarding. The eCR onboarding team will inform PHA partners to begin widespread HCO outreach. During this stage, there is continuous collaboration between the HCO, the EHR product team and the eCR onboarding team to identify and resolve issues for optimizing case reporting and addressing subsequent product updates.

Now, let's turn our attention to some of the existing resources to support your next steps.
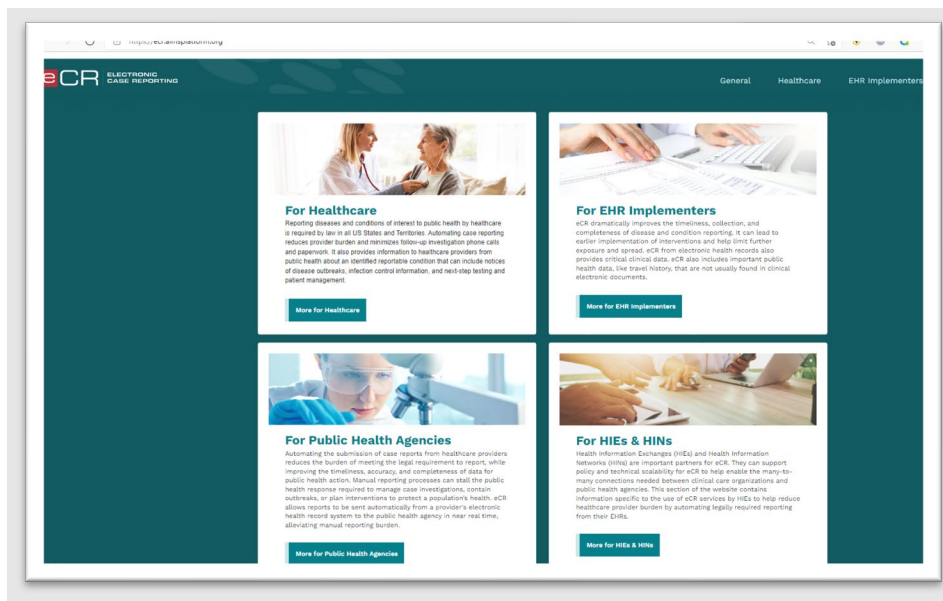


*Fig 3. Navigate to display eCR - Electronic Case Reporting (aimsplatform.org).*

- I'd like to orient you to the AIMS platform's eCR website, available at ecr.aimsplatform.org. This is a primary resource for your team to explore, and the "EHR Implementers" section outlines the functionality you'll need to support.
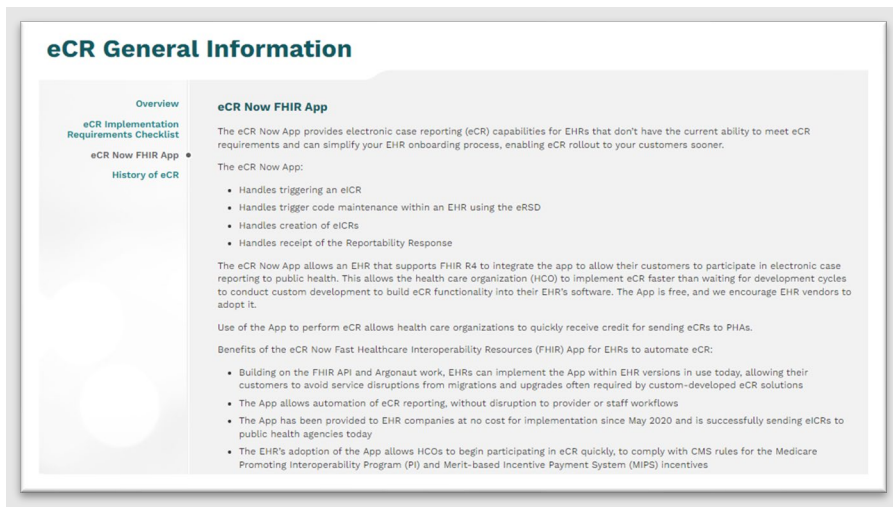
*Fig 4. From prior figure, select "eCR Overview" button > from left sub-menu select "eCR Now FHIR App" > scroll until section header is at top of screen. Navigate to display [eCR Now FHIR App (aimsplatform.org)](#)*

- I'll also call out the eCR Now FHIR App page, which you can find from the homepage by navigating to "eCR Overview" and then to "[eCR Now FHIR App](#)". This page outlines the advantages of using the eCR Now FHIR app, its attributes, and links to the GitHub site where you can explore the source code, configuration documentation, and more.

**Let's wrap up with a recap of immediate next steps**
*Fig 5: Slide of the below.*

1. Distribute this recording to any others on your EHR product team who will be involved in your EHR eCR onboarding!
2. Review materials at [https://ecr.aimsplatform.org/](https://ecr.aimsplatform.org/)
3. Determine if your EHR product will accomplish eCR via integrating the eCR Now FHIR App or a vendor-developed eCR implementation
4. Submit one response per EHR product at the EHR/Health IT Electronic Case Reporting Onboarding Intake Form (available at [https://app.smartsheet.com/b/form/669477aa64c14014b214f8e1a4e8847d](https://app.smartsheet.com/b/form/669477aa64c14014b214f8e1a4e8847d))
5. Download and save a copy of the eICR Data Needs workbook (available at [https://ecr.aimsplatform.org/ehr-implementers/eicr-creation-validation-standards/](https://ecr.aimsplatform.org/ehr-implementers/eicr-creation-validation-standards/)). Populate the status columns as indicated in the ReadMe tab and return via email to [eCR@cdc.gov](mailto:eCR@cdc.gov).

For any questions, please reach out to the eCR Onboarding Team at [eCR@cdc.gov,](mailto:eCR@cdc.gov) including your EHR or Health IT company and product name in the email subject line.

Thank you again for watching the "Introduction to Electronic Case Reporting (eCR) - For EHR and Health IT Vendors" video!