

CDX E2E (clinic to clinic): CDA Level 1 with Multiple Attachments

Background

A sending EMR (primary care physician) may have a requirement to send multiple attachments alongside a CDA level 1 document (common example is a Referral request note to a specialist). The attachments might be supplemental documents and images supporting additional patient medical background (eg: lab reports, forms, consents, images, etc.) that the receiving specialist/clinic requires. In CDX, currently only one attachment is referenced in a CDA level 1 document and this attachment is often one PDF that encapsulates all additional documents and images. If the sending EMR wishes to send separate attachments in one message, the design approach must be clarified.

Overview

A CDA level 1 document can have a text body (the referral letter as an example) or a reference to one attachment that is found in the transport wrapper of the message. When sending multiple attachments using a CDA level 1 document, the sending and receiving EMR must understand that there could be multiple attachment elements placed in the transport wrapper that may not be directly referenced by the unstructured body in the CDA document. In order to facilitate the exchange of multiple attachments, the sending and receiving EMR need to understand their respective responsibilities as defined below.

Sending EMR – Responsibility

1. In the CDX Transport Wrapper the sending EMR SHALL Base64 encode and place each supplemental attachment in an `attachmentText` element. This can occur regardless of the MIME type indicated in the CDA body.
2. In the CDA document, the unstructured body element (`ClinicalDocument/NonXMLBody`) should consist of a narrative text body containing a list of document attachments that are being sent with this note. Note that there is no coded links to the file attachments in this narrative, only text references describing additional attachments have been sent.

Receiving EMR – Responsibility

1. When receiving a CDA level 1 document, check the CDX Transport Wrapper for ALL `attachmentText` elements and store them with the original document contained in the CDA body. Although the attachments are not directly linked to the narrative text in the body, they are intended to support the original document.

Attachments in the CDX Wrapper

Attachments are placed in the CDX transmission wrapper in an `<attachmentText/>` element. The wrapper when sending to CDX is the RCMR_IN00002UV01 document, and when receiving from CDX, it is the RCMR_IN000032UV01 document. Each attachment is given an `<attachmentText/>` element. There is no limit to how many attachments can be included, although there is a total message size limit of 3 MB. The attachments are placed in the wrapper between the `<acceptAckCode>` element and the `<receiver>` element.

An attachment element should have the following attributes: `representation`, `mediaType`, and `integrityCheck`. The `representation` should always be set to “B64” (for Base-64 encoding), the `mediaType` should be set to the MIME type of the attachment (usually “application/pdf”), and the `integrityCheck` should be the hex string representation of the attachment’s SHA-1 hash. The Base-64 encoded attachment goes into this element.

Here is an example of an `attachmentText` element in the wrapper:

```
<attachmentText representation="B64" mediaType="application/pdf"
integrityCheck="25f9c5da5b99683fe6725fa8f21e9a482ccdb4d">JVBERi0xLjUNCiW1tbW1DQoxIDAgb...</at
achmentText>
```

For multiple attachments, simply repeat this element with the information for each attachment.

The Attachment Reference in The CDA

If the CDA has a reference to an attachment in the body, the body should be a single reference to the “primary” attachment. This reference should be a SHA-1 hash that matches the `integrityCheck` attribute of the primary attached document. The hash in the CDA must match the hash of one of the attachments in the wrapper. If there are multiple attachments, the hash will clarify which attachment is considered “primary”.

In the `nonXMLBody` element, both the text’s `integrityCheck` and the reference value contain the hash:

```
<nonXMLBody classCode="DOCBODY">
  <text mediaType="application/pdf" integrityCheck="25f9c5da5b99683fe6725fa8f21e9a482ccdb4d"
integrityCheckAlgorithm="SHA-1" representation="TXT">
    <reference value="hash:25f9c5da5b99683fe6725fa8f21e9a482ccdb4d" />
  </text>
</nonXMLBody>
```

The reference is the attachment’s hash because there is no other ID for attachments in the CDX system.

References:

Consuming a BC CDA at Level One

<https://bccdx.ca/Documents/Consuming%20a%20BC%20CDA%20at%20Level%20One.pdf>

CDX Implementation Guide - Transmission Messaging Wrapper

<https://bccdx.ca/Pages/docs.aspx>

The HL7 v3 transmission wrapper is common to all CDX interactions. The transmission wrapper allows zero to many attachments to be contained in the wrapper “attachmentText” elements. Each attachmentText element will contain one attachment.

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The CDX transmission wrapper MAY have zero or more “attachmentText” elements present representing a file attached to the message payload (for example, a CDA).

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Interior Health Health Information Exchange Team

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