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<u>**CDA, CCR or CCD?**</u>

The need for standardized interoperability in the healthcare industry is an understatement. Many groups and organizations have been put into place for the sole purpose of creating standards that can be adopted by the healthcare community in an effort to provide better patient care.

One of the many challenges of interoperability is the lack of consistent standards. The lack of consistency creates confusion and chaos when it comes to exchanging patient data and having the knowledge to know which standard to choose makes it even more difficult for interoperability to be successful in the healthcare community. For the purpose of this paper, three standards of interoperability will be discussed – HL7 CDA, ASTM CCR and CCD.

HL7 developed the HL7 Clinical Document Architecture (CDA) standard. Its purpose is to provide healthcare stakeholders – provider to provider, provider to hospital, etc. - the ability to exchange any type of "clinical documents" in an XML format. The clinical documents include, but are not limited to: imaging reports, discharge summaries, pathology reports, lab results, history and physicals and much more.[i] Although this information exchange is highly beneficial in that providers have quick and easy access to another provider's most recent patient clinical documentation, it also poses some challenges. One of the challenges is the way in which the information is presented once it has been exchanged. According to research, the HL7 CDA does not use a template format to display the information, but instead presents the clinical data in a very general textual format. For example, if a patient's history and physical information is exchanged in the CDA format, it does not section the history and physical information into categories, i.e. medications, allergies, social history but instead is displayed in paragraph format. [ii] The general format is unstructured and makes reviewing and reading the information a bit difficult at times.

The American Society for Testing and Materials (ASTM) developed the Continuity of Care Record (CCR). The CCR is a standard whose purpose is also to provide healthcare stakeholders – provider to provider, provider to patient, provider to hospital, etc. - the ability to exchange clinical data but in a more structured way while also providing more flexibility in how the information is shared. [iii] The CCR allows the provider to generate a patient summary for the patient and present it immediately following the office visit. The information could be generated on paper or exported to a thumb drive for the patient to have in the case of emergency use or for use while under the care of a temporary provider. Because the CCR is also intended to be shared with the patient, the format of the documentation is easier to read and understand for the patient and his or her caregiver. The CCR provides a sense of comfort to patients with chronic conditions giving them the peace of mind that they have their most updated record in their hands.

Since the two standards both provide the electronic exchange of patient clinical documentation, but at the same time pose some level of competition, both organizations collaborated and develop the popularly known standard, the Continuity of Care Document (CCD).

The CCD is an XML format standard that combines features of both the CDA and the CCR, in that the documentation is provided in both narrative text and structured documentation to accommodate the needs of the patient, the provider and any other healthcare provider involved in the care of the patient. It offers the ability to generate a patient summary to be exchanged and or exported for the benefit of improved patient care.

Some of the benefits of adopting the CCD standard are: 1. Providers receive an up-to-date medications list which can ultimately reduce writing erroneous prescriptions where there may be conflicts with other medications that a

patient may already be taking; 2. Patients are able to receive their clinical summary either electronically or exported to a thumb drive to be used and transferred to another provider who may be temporarily caring for the patient; 3. Hospitals can transfer a patient's hospital discharge summary electronically to the patient's provider without having to fax it to the practice. All are huge timesavers, and aid in the reduction of clinical errors.

Some of the challenges or issues with adopting the CCD standard are: 1. A down system may not allow for access to the patient's chart; 2. Due to politics within a hospital, the hospital may not be willing to exchange or export any patient data from their hospital EHR to be given to another practice even in the name of continuity of care; 3. Some patients don't feel comfortable with their clinical information being electronically exchanged because of confidentiality; 4. Some EHR systems may not have the proper security or encryption tools in place to protect the patient when their confidential medical information is being exchanged electronically.

Currently the CCD requirements are of the United States and therefore have not been adopted internationally. [iv]

Despite the benefits and challenges of all three standards, many systems Microsoft Health Vault, Surescripts Clinical Interoperability Solution and many healthcare IT vendors have implemented the CCD standard as the preferred standard for communication and information exchange of patient data.

i https://www.hl7.org/implement/standards/product_brief.cfm?product_id=7

ii http://en.wikipedia.org/wiki/Continuity_of_Care_Record#The_CCR_standard

iii http://en.wikipedia.org/wiki/Continuity_of_Care_Record#The_CCR_standard

iv

http://en.wikipedia.org/wiki/Continuity_of_Care_Document#Competition_and_Internet_Health_Industry_Standards