Definition of Interoperability
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In healthcare, interoperability is the ability of different information technology systems and software applications to communicate, exchange data, and use the information that has been exchanged.[1] Data exchange schema and standards should permit data to be shared across clinicians, lab, hospital, pharmacy, and patient regardless of the application or application vendor.[2] Interoperability means the ability of health information systems to work together within and across organizational boundaries in order to advance the health status of, and the effective delivery of healthcare for, individuals and communities.[3]

There are three levels of health information technology interoperability:[4] 1) Foundational; 2) Structural; and 3) Semantic.

1. "Foundational" interoperability allows data exchange from one information technology system to be received by another and does not require the ability for the receiving information technology system to interpret the data.

2. "Structural" interoperability is an intermediate level that defines the structure or format of data exchange (i.e., the message format standards) where there is uniform movement of health data from one system to another such that the clinical or operational purpose and meaning of the data is preserved and unaltered. Structural interoperability defines the syntax of the data exchange. It ensures that data exchanges between information technology systems can be interpreted at the data field level.

3. "Semantic" interoperability provides interoperability at the highest level, which is the ability of two or more systems or elements to exchange information and to use the information that has been exchanged.[5] Semantic interoperability takes advantage of both the structuring of the data exchange and the codification of the data including vocabulary so that the receiving information technology systems can interpret the data. This level of interoperability supports the electronic exchange of health-related financial data, patient-created wellness data, and patient summary information among caregivers and other authorized parties. This level of interoperability is possible via potentially disparate electronic health record (EHR) systems, business-related information systems, medical devices, mobile technologies, and other systems to improve wellness, as well as the quality, safety, cost-effectiveness, and access to healthcare delivery.[6]

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[1] HIMSS *Dictionary of Healthcare Information Technology Terms, Acronyms and Organizations*, 2nd Edition, 2010, Appendix B, p190, original source: Wikipedia.
[2] American Academy of Family Physicians (AAFP), Center for Health IT, 2013.
[3] HIMSS *Dictionary of Healthcare Information Technology Terms, Acronyms and Organizations*, 3rd Edition, 2013, p. 75.
[4] *National Committee on Vital and Health Statistics (NCVHS) Report on Uniform Data Standards for Patient Medical Record Information,* July 6, 2000, pp. 21-22.
[5] Institute of Electrical and Electronics Engineers. *IEEE Standard Computer Dictionary: A Compilation of IEEE Standard Computer Glossaries.* New York, NY: 1990.
[6] HIMSS *Dictionary of Healthcare Information Technology Terms, Acronyms and Organizations*, 2nd Edition, 2010, Appendix B, p190, original source: HIMSS Electronic Health Record Association.