Chapter 20
Interoperability in Laboratory Management Information Systems

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ABSTRACT

Medical laboratories are the key departments for healthcare. It does not matter if they are independent or part of the health center; they use an information management system. This system has to communicate and exchange data with many different organizations for many different reasons. Interoperability is the ability of two or more systems to exchange data and to use the exchanged data as their own. As always in health information technologies, this is easy to say and hard to perform. It has some challenges. To conquer interoperability, we need standard vocabularies, protocols, nomenclatures, classifications, etc. In this chapter, laboratory management information system-related interoperability issues are examined.

INTRODUCTION

Medical laboratories are the key departments for healthcare. The tests done in medical laboratories give important information that constitutes the basis for the diagnosis and treatment. The term "Medical laboratories" is commonly used for Pathology, Microbiology and Biochemistry. Genetics and Hematology can also be understood. Medical laboratories may be independent, or part of a healthcare institute such as hospital or health center. They may belong to private sector or government. In all cases, they employ highly complicated information systems, called as Laboratory Management Information Systems (LAMIS).

If the medical laboratory is part of a hospital, LAMIS used in it may be a component of the Hospital Information System (HIS), it has the same database and application platform. In this case, it can exchange data with the other information system components such as order entry, accounting etc. natively. Alternatively, LAMIS may be a third party product independent of the HIS, having different database and application platform. In this scenario, it does not have a chance to communicate with the other HIS components natively. A communication application is needed. If the medical laboratory is independent then this need is inevitable. Because the LAMIS used are different from the systems of the sites, it needs a

separate communication application to manage the communication. The notion "Interoperability" has arisen from this need of communication with other information systems.

Healthcare Information and Management Systems Society (HIMSS, 2013) defines interoperability as "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." The Institute of Medicine of the National Academies (IOM,2004) defines interoperability as "the ability of systems to work together, in general through the adoption of standards. Interoperability refers not only to the ability to exchange health information, but also to the need to understand the information that has been exchanged."

Figure 1 presents the communication needs of LAMIS. LAMIS' are to communicate

- With auto analyzer laboratory devices used within the laboratory,
- With public health departments about the mandatory reporting of the infectious diseases and other important data,
- With wearable and portable devices used by patients,
- With insurance companies for accounting,
- With patient provider healthcare institutes.

The term "interoperable" is used to explain that an information system has the ability to communicate with the necessary systems and devices.

Figure 1. LAMIS communication needs
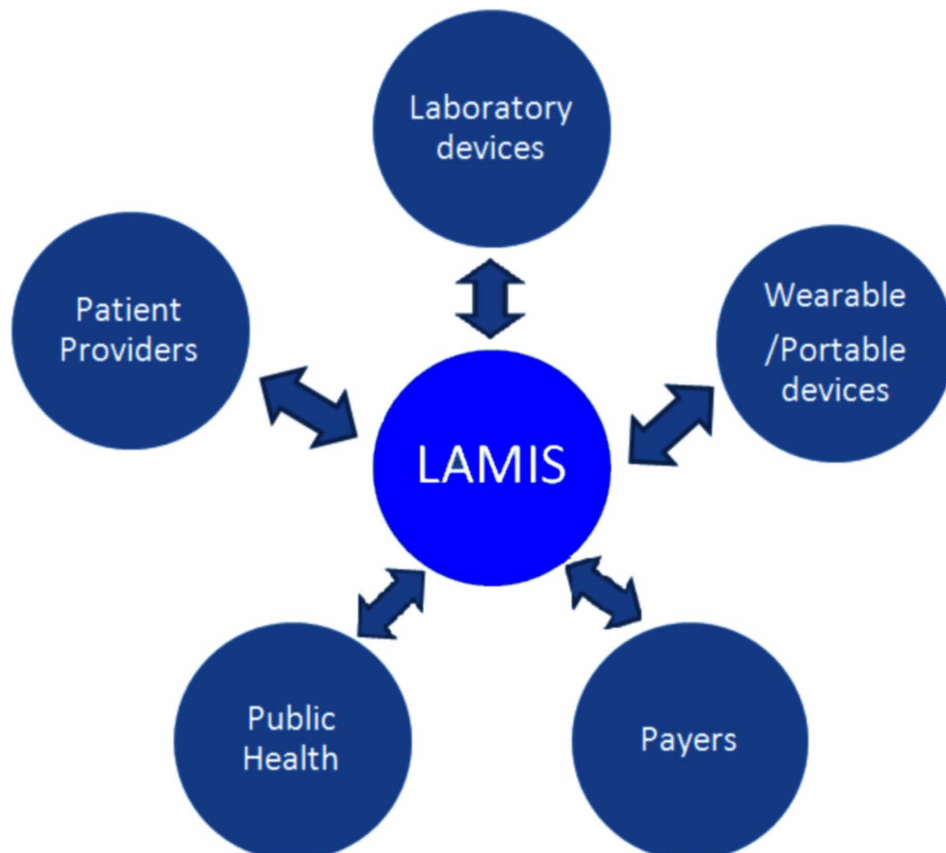
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