The United States (US) healthcare industry is undergoing three major, overlapping developments in the evolution of data management and information technology utilization: (1) Data collection, characterized by the adoption and meaningful use of electronic medical records; (2) Data sharing, characterized by the adoption of health information exchanges; and (3) Data analysis, characterized by the adoption of enterprise data warehouses and analytic tools.

In 2004, the Healthcare Information Management Systems Society (HIMSS) published the seven-stage EMR Adoption Model (EMRAM), creating a pivotal framework for measuring the industry’s advancement toward the use of computerized medical records. The EMRAM was also useful to vendors and led to the development of the federal Meaningful Use criteria. In addition, hospitals and physician organizations used the EMRAM as an internal guide for assessing their progressive utilization of an EMR. No such industry-wide framework for the adoption and utilization of health information exchanges (HIEs) exists, but, recently, several organizations have published frameworks for business models to address the poor track record of economic sustainability for HIEs.

The adoption of enterprise data warehouses, business intelligence and analytics in healthcare is estimated at approximately 10%, with substantial growth anticipated in the next decade (Frost & Sullivan 2012). A generally accepted framework for adoption and meaningful use of data warehouses and analytics in healthcare could be very beneficial, in ways similar to the HIMSS EMRAM. The eight-level framework depicted in Figure 1 is proposed for that purpose, with the hope that comments and feedback for improvement will result in a nationally recognized standard.

The previously mentioned data collection phase, characterized by the urgent deployment of EMRs, will not, by itself, have a significant impact on the quality or cost of healthcare in the US. Numerous retrospective studies of EMR deployment have yet to reveal anything other than a very modest return-on-investment (ROI) (Goodman 2005; Hillestand et al. 2005) and those modest returns are very dependent on complex local factors of deployment. More recently, the US Secretary of Health and Human Services and Attorney General issued a national letter of warning (24 Sep 2012) to five healthcare industry associations, suggesting that electronic health records are actually increasing the cost of care in the US by enabling fraudulent billing and “up coding.” However, the investment in EMRs, as a source of workflow transaction data, is fundamentally required to achieve the value that is accessible in data warehousing; and the ROI from data warehousing is well-documented (Nucleus Research 2002). The ROI from the more than $50B invested in EMRs, let alone impactful health reform, will not be realized until the healthcare industry invests in enterprise data warehousing and commits culturally to the exploitation of data – that is, to become a data-driven culture, incented economically to support optimum health at the lowest cost.
Historically, healthcare delivery organizations in the US have focused on, at best, managing quality and cost separately. In truth, were it not for pressure from the federal government and private insurance companies, the US healthcare system would be even less inclined to measure, and less mature at measuring, quality of care. In addition, the predominant methodology for measuring quality in US healthcare enterprises is to measure cost of operations, with little focus on, at best, managing quality and cost separately. In the future, CFOs and other C-level executives must manage both quality and cost and understand the interplay between the two, as implied in the healthcare value equation, below. This equation represents the foundational motive underlying healthcare analytics in the future.

\[
\text{Healthcare value} = \frac{\text{Adherence to evidence-based medicine} \times \text{patient-reported outcome}}{\text{Cost of production} + \text{reasonable operating margin}}
\]

A follow-on paper, to be published in the next issue month, will provide further details and arguments for the importance of a Health Analytic Adoption Model as a means of deriving the value from substantial US EMR investments.

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