



## UNDERSTANDING WHY (AND HOW) **Informatics is Accelerating Healthcare's Transformation**

Data produced throughout health and healthcare and how it is translated into useable knowledge are the driving forces of informatics. People benefit from informaticians' ability to collect, analyze and interpret data, which creates information and knowledge that is applied to healthcare decisions.

### **DATA SCIENCE**

**Data science** is the expertise of extracting knowledge or insights from the data in various forms. Data science is not limited to healthcare. To be able to extract and transform data into knowledge, one needs to apply computer science and mathematical techniques to a dataset or collection of data that is very large—often referred to as big data.

### **BIG DATA**

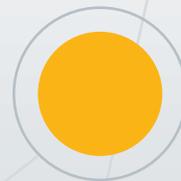
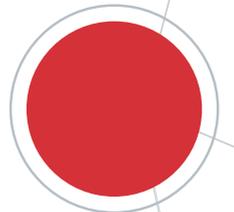
In healthcare **big data** comes from patient records, prescription records, genomic data, imaging, epidemiology studies, environmental data, clinical data or any other data set that in some way connects to care, treatments, patients or public health. Today, the amount of data are so massive that past methods used to collect, store and analyze it may no longer work—there are just too much data. Informatics is needed to assure that data are properly understood and analyzed and can be put to the best possible use(s). Informatics is what allows us to transform and make use of data.

### **HEALTH INFORMATION MANAGEMENT**

Storing and collecting healthcare business data in accordance with regulations and laws, identifying errors and missing billing data and assigning codes to it is a necessary component of patient care that most accurately is considered **health information management (HIM)**. This is a separate and distinct field from informatics. However, once this data, which is generated by the growing number of health information technology (HIT) applications, like electronic health records (EHRs), is collected it can be subjected to additional analysis by the informaticians who affect patient care.

### **DATA ANALYTICS**

During **data analytics**, researchers create models to analyze the data in different ways to identify patterns, evaluate findings, test hypotheses and further manipulate the data to achieve more precise analysis or results, if possible.



# Informatics

Informatics is when the insights developed through data transformation, analytics, discovery and observations of clinical practices are applied to a healthcare priority by a healthcare expert. Informatics is the key to ensuring healthcare data are translated into meaningful knowledge that helps healthcare professionals make appropriate decisions to assist people. The presence of an expert in healthcare, whether it is clinical care, public health, drug development or another domain that seeks to improve care decisions is what distinguishes health informatics from data science and health information management.

Informatics is the intersection between the work of stakeholders across the health and healthcare delivery system who maintain specific health expertise, committed to learning from each individual patient and seek to improve outcomes, increase safety and promote the high-quality services based on insights discovered in healthcare's data.

Previously, a small subset of healthcare experts comprised the field of informatics. Over the past 35 years, those with degrees in computer science, statistics, epidemiology, nursing and population health recognized they can help countless people through informatics. That's why they embark on advanced education and training to have both the data science and medical expertise necessary. AMIA continues to define the credentials for professionalizing the field of informatics and the sub-specialties within it.

## SPECIALTIES WITHIN INFORMATICS

Broadly, AMIA defines informatics as applying insights from data analytics to a healthcare priority by a healthcare expert. AMIA defines the specialties within informatics as:



**Translational bioinformatics:** Applying informatics to optimize biomedical and genomic data into predictive, preventive and participatory health.



**Consumer health informatics:** Applying informatics from the perspective of multiple consumer or patient views, such as health literacy and consumer education.



**Clinical research informatics:** Applying informatics to discover and manage new knowledge related to health and disease, such as patient safety and clinical trials.



**Public health informatics:** Applying informatics to the areas of public and population health, such as surveillance, reporting and health promotion.



**Clinical informatics:** Applying informatics to delivering healthcare services in care facilities, such as hospitals and community health centers.

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