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Collaborative AI and Laboratory Medicine integration in precision cardiovascular medicine

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Abstract

Artificial Intelligence (AI) is a broad term that combines computation with sophisticated mathematical models and in turn allows the development of complex algorithms which are capable to simulate human intelligence such as problem solving and learning. It is devised to promote a significant paradigm shift in the most diverse areas of medical knowledge. On the other hand, Cardiology is a vast field dealing with diseases relating to the heart, the circulatory system, and includes coronary heart disease, cerebrovascular disease, rheumatic heart disease and other conditions. AI has emerged as a promising tool in cardiovascular medicine which is aimed in augmenting the effectiveness of the cardiologist and to extend better quality to patients. It has the ability to support decision-making and improve diagnostic and prognostic performance. Attempt has also been made to explore novel genotypes and phenotypes in existing cardiovascular diseases, improve the quality of patient care, to enable cost-effectiveness with reduce readmission and mortality rates. Our review addresses the integration of AI and laboratory medicine as an accelerator of personalization care associated with the precision and the need of value creation services in cardiovascular medicine. © 2020 Elsevier B.V.

Author Keywords

Artificial intelligence; Biomarkers; Cardiology; Data; Laboratory; Machine learning; Personalized

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acute heart infarction, Article, artificial intelligence, artificial neural network, Bayes theorem, cardiologist, cardiology, cardiovascular disease, cerebrovascular disease, cost effectiveness analysis, differential diagnosis, genomics, genotype, health care quality, heart failure with preserved ejection fraction, hospital readmission, human, ischemic heart disease, laboratory, logistic regression analysis, machine learning, medical decision making, metabolomics, mortality rate, outcome assessment, patient care, personalized medicine, phenotype, priority journal, prognosis, proteomics, rheumatic heart disease, support vector machine, transcriptomics, algorithm, cardiovascular system, laboratory, personalized medicine; Algorithms, Artificial Intelligence, Cardiovascular System, Humans, Laboratories, Precision Medicine

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