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Highlights

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Advancing healthcare and biomedical research via new data-driven approaches

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Every issue of *JAMIA* presents articles related to biomedical data science: from algorithms that discover and validate data-driven patterns, to big data indexing strategies, to predictive models that use novel approaches to analyze new or reused data. In this issue of *JAMIA*, several articles relied on mining of large data sets: Chen (p. 472) focuses on electronic health records for prediction of clinical order patterns, while Ghassemi (p. 488) uses a time series for prediction of vasopressor effects. Ritchie (p. 577) uses a new approach that utilizes genomic interactions for prediction of clinical outcomes in ovarian cancer. When mining individual level data, it is critical that the privacy of individuals be protected. O'Keefe (p. 544) proposes an online data center approach to prevent re-identification, while Dernoncourt (p. 596) uses recurrent neural networks to de-identify patient notes.

Data analysis related to medications is also a popular topic in *JAMIA*. Patel (p. 614) uses the biomedical literature to suggest drug repositioning based on drug-drug interactions, Noor (p. 556) proposes a drug-drug interaction discovery approach using semantic web technologies, and Shah (p. 565) suggests potentially synergistic drug combinations using data from electronic health records (EHRs) and gene expression measurements. Also related to utilization of EHRs for research, Elemento (p. 513) reports on a cancer precision medicine knowledge-base for interpretation of clinical-grade mutations, and Garcelon (p. 607) describes an approach to improve full text searches on family history. Banerjee (p. 550) presents a heart failure dashboard designed to reduce readmissions, and Delon (p. 588) uses data from a national health insurance information system to implement epidemiological surveillance of malaria. Clinical decision support systems (CDSS) for emergency care are reviewed by Bennett (p. 655), and the cost-benefit of CDSS for cardiovascular disease prevention is reviewed by Jacob (p. 669).

Increasingly, novel applications that target patients as their primary users are published in *JAMIA*. Hui (p. 619) reviews mobile apps for self-management in asthma, while Zikmund-Fisher (p. 520) shows how graphics can help patients recognize urgent deviations in laboratory results. With the vast amount of health information available online, it is timely that Allam (p. 481) proposes an instrument to assess the quality of web page contents. Additionally, McClellan (p. 496) shows how data from social media can be used to monitor mental health discussions, and Lambooij (p. 529) reports on the use of personal health records in the Netherlands.

Finally, electronic systems are now disseminated into many tasks that directly or indirectly relate to healthcare and biomedical research. Khodyakov (p. 537) reports on an online system to help large groups of stakeholders in prioritizing research topics, Herndon (p. 503) uses a stakeholder-engaged approach to develop and validate clinical quality measures, and Pagliari (p. 633) reviews human resource information systems in healthcare.

JAMIA has always been a venue for dissemination of biomedical data science, and is now issuing a call for papers on biomedical data science that emphasize the development of a data commons in which multiple digital objects can be found, accessed, and reused through interoperation in reproducible workflows and digital "recipes." This special focus issue will solidify the overdue partnership with data repositories—*JAMIA* articles will be accompanied by data utilized, as well as by software deposited in code repositories or containers that may encapsulate these types of digital objects. We look forward to advancing healthcare and biomedical research through your submissions for this and future issues.