

Top Ten Things To Know Merging Electronic Health Record Data and Genomics for Cardiovascular Research

1. Electronic health records (EHRs) can contribute to improved understanding of disease susceptibility, disease progression, and response to therapy.
2. In addition to clinical laboratory data, EHRs can accommodate genetic and genomic data, which has the potential to further increase knowledge of disease mechanisms.
3. In general, patients have expressed interest in participating in biomedical research – one survey reported that 73% of respondents would be willing to release their medical records for research.
4. A number of resources have combined EHRs with DNA or other biosamples, including the National Human Genome Research Institute's Electronic Medical Records and Genomics Network, the Kaiser Permanente Northern California Research Program on Genes, Environment and Health biobank, and Vanderbilt's BioVU.
5. Structured data elements for symptoms, diagnoses, procedures, medications, and other concepts are necessary to allow the combination of EHR data across providers and institutions, while potentially allowing for the inclusion of data from registries and clinical trials.
6. The optimal strategies for combining EHR and genomic data are unclear, because of both the computational demands of the information as well as the need to balance security and accessibility.
7. The combination of EHR and genomics could have a more immediate clinical impact for patients with genetic variants affecting the selection of medications.
8. The development of best practices that unify individual institutional review board policies will be critical to facilitate data sharing from biorepositories.
9. Certain properties of the analytics environment, such as linkage of molecular observations to the laboratory methods used to generate them, will be required to ensure the applicability of findings to both individuals and populations.
10. The evolution of genomics, EHR use, and information technology has considerable potential for enhancing the understanding of cardiovascular genomics and improving cardiovascular care.

Hall JL, et al; on behalf of the American Heart Association Professional and Public Education and Publications Committee of the Council on Functional Genomics and Translational Biology, Council on Clinical Cardiology, Council on Epidemiology and Prevention, Council on Quality of Care and Outcomes Research, and Stroke Council. [Merging electronic health record data and genomics for cardiovascular research: a science advisory from the American Heart Association](#) [published online ahead of print March 14, 2016]. *Circ Cardiovasc Genet*. doi: 10.1161/HCG.000000000000029.