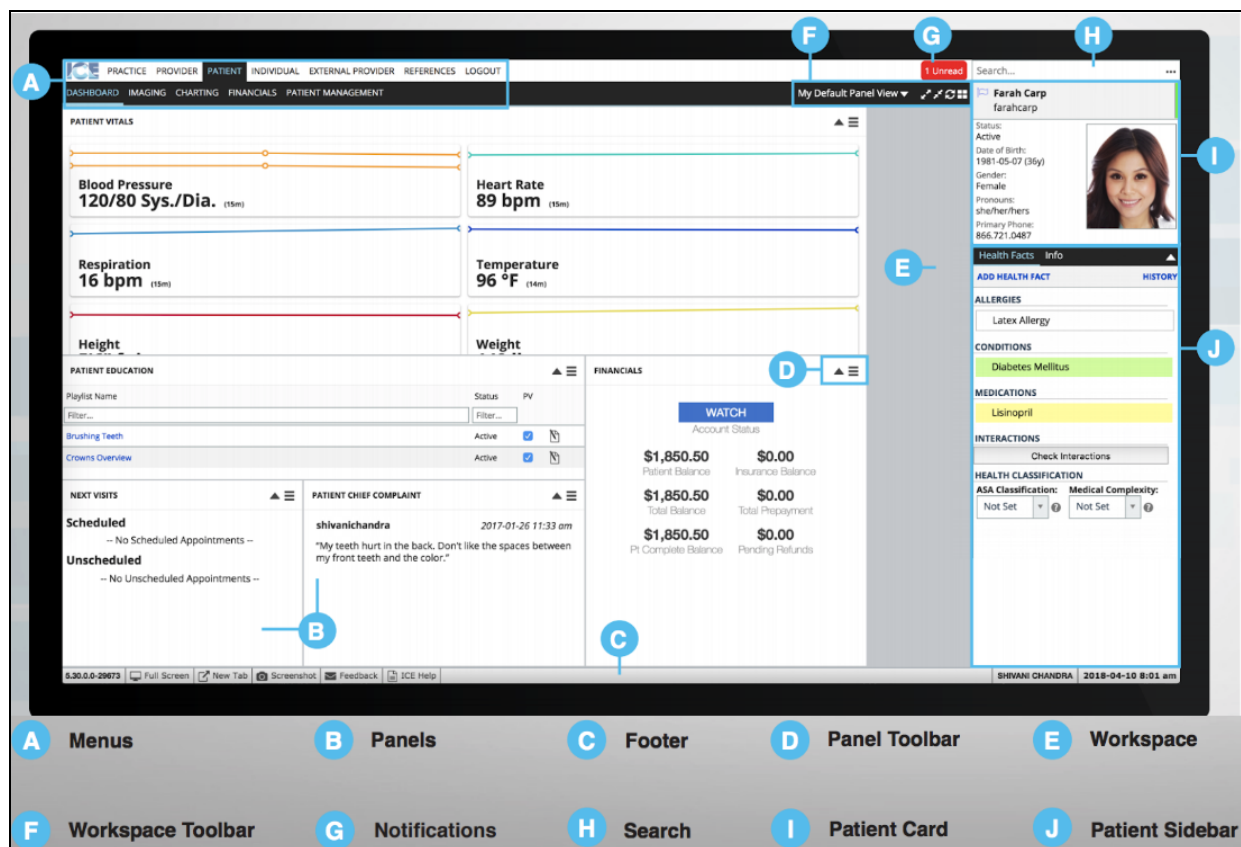

Data Warehousing

With ICE Health Systems

Background

With the leadership provided by the [Collaboration for Health IT](http://Collaboration4HIT.org) (Collaboration), the team at [ICE Health Systems](http://ICEhealthsystems.com) (ICE) has created a comprehensive electronic health record (EHR). The purpose of the EHR is to provide a streamlined workflow that is easy-to-use, thorough, and supports the development of clinical standards internationally. One of the main objectives of the Collaboration is to provide the ability for all healthcare practitioners to contribute to and benefit from a global access to health information for the purpose of enhancing research, patient care, and population health internationally.

ICE intends to develop a central repository that allows organizations with ICE EHR environments to contribute de-identified data. This collaborative storing of data is considered Data Warehousing, and would be available for approved research and analytics. One of the founding priorities of the Collaboration is to supply data warehousing functions in order to support large data pools for researchers and to enable universities as well as private and community clinics throughout the world to contribute. The Collaboration is committed to establishing data entry tools for clinicians and administrators in order to provide improved consistency of information.



ICE Health Record System

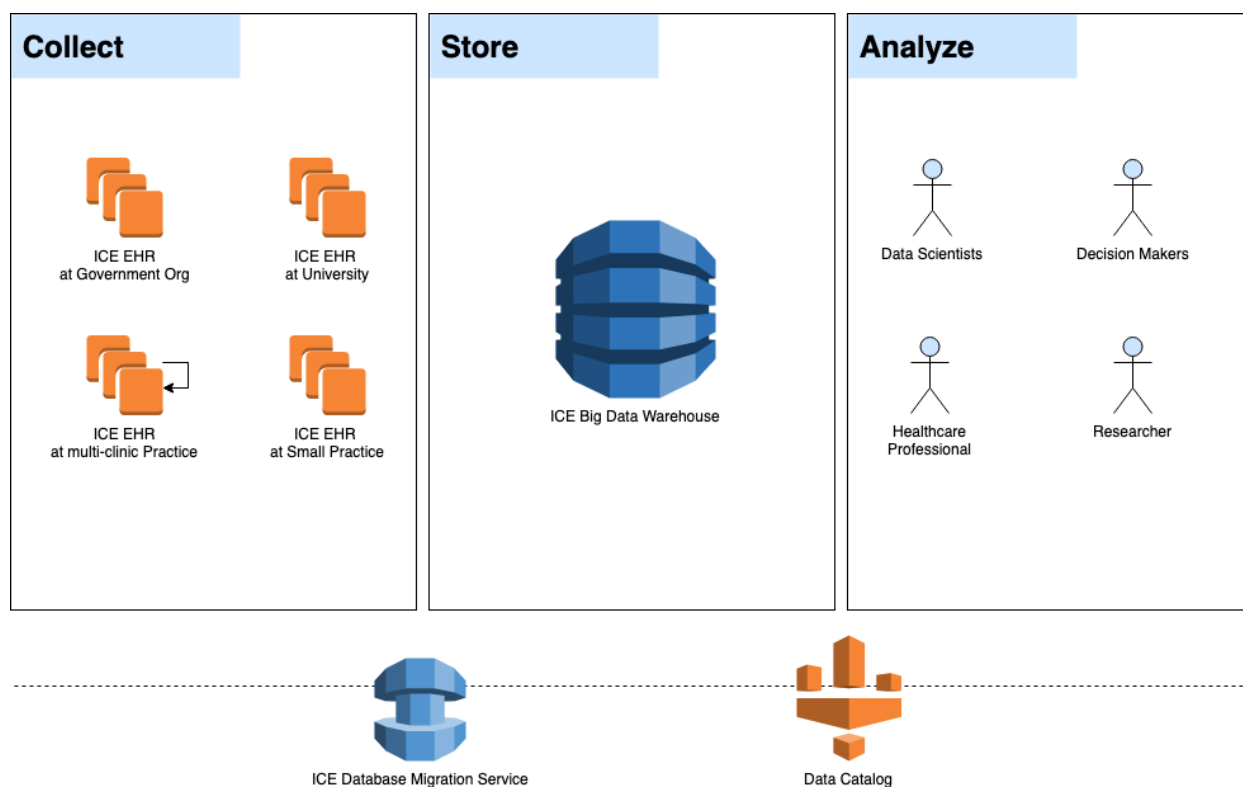
Technology

The landscape of the healthcare professional is changing due to important advances in technology as well as federal regulations and economic realities. The tremendous rate that technology is evolving means we are now able to deliver support to the providers and patients in ways that were not possible before. One of the more exciting areas of support for the healthcare community lies in the consistent modeling and warehousing of data. Technical advancements now allow data organization from different sources in a consistent manner so that researchers have an increasingly reliable and valid data set from which to learn.

Development

ICE Health Systems established the technical and security foundation required for data hosting, migration, and warehousing. Within the warehousing-specific dimension of this

collaborative effort, we developed a data governance framework and address areas that need to evolve in order to facilitate the use of the repository for clinical and quality improvement research. The development of a secure and interoperable cloud system for healthcare enables us to utilize the gathered patient data through the use of [structured content](#) and data mining. The consistency of the data structure, combined with the secure and cloud based delivery mechanism means that the profession can now combine and mine data on an ongoing basis. ICE includes a reporting component which is an extensive data analytics tool allowing the profession to easily access and analyse the collected and de-identified data. The elements that can be combined, merged and analysed include clinical, administrative, and financial information. With cloud based warehousing, the previous limits of isolated data, restricted users, and local storage has been removed and the profession is now poised to have Big Data available in real time.

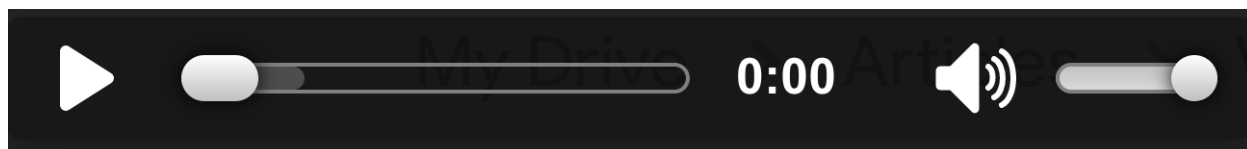


The ICE Big Data Warehouse will contain a 'limited dataset' where data are de-identified with the exception of dates (eg, date of birth, visit dates) and zip codes. According to the requirements of the [Health Insurance Portability and Accountability Act](#) (HIPAA), each

participating clinic and institution must execute a Data Use Agreement (DUA) to allow the use of a limited dataset for research purposes¹. Each contributing institution and clinic controls the data it contributes and has the right to remove data. However, data cannot be removed retrospectively from approved research projects where data has already been shared or committed to be shared. New projects will not have access to data from the clinics that decided to stop sharing data.

Need

There is a desire for an increased understanding of the effectiveness of common dental and medical treatments. With expanding data gathering, we have the potential to study all elements of care from economic, clinical approaches, age, gender, place of care, influence of medications, conditions, allergies and much more. Furthermore, we have the ability to address questions regarding efficiency, long-term outcomes, materials used, geographical differences and more. The regular updates of the warehouse provide the most current information and the ability to link medical, dental, economic, medications, and other information.



[*Dr. Lynn Johnson speaking on ICE Health Record System*](#)

Conclusion

The Collaboration has provided ICE with the required information, guidance, and feedback to create a robust, secure, and cloud based EHR system for healthcare. The EHR is now being used in university institutions and private clinics around the world. As such, the data repository in the ICE Big Data Warehouse has the potential for infinite growth. We invite you to join us in our efforts to advance healthcare.

¹ <http://ora.research.ucla.edu/OHRPP/Pages/HIPAA.aspx>