Electronic health records allow for complete and up-to-date medical information to be stored and made available to patients and health care providers. In addition to improving care and reducing costs and clinical errors by providing a patient’s complete medical history, electronic health records and other forms of telemedicine shift the focus of healthcare from reactive and hospital-based to more proactive and patient-based. Electronic medical records contain patient demographics, progress notes, problems, medications, vital signs, past medical history, immunizations, laboratory data and radiology reports. [1]

In his State of the Union Address on January 20, 2004, Pres. George W. Bush outlined a plan to ensure that most Americans would have electronic health records within the next 10 years. Incorporating information technology and electronic health records into U.S. medical practices could help solve many problems which plague the healthcare industry such as high costs, uncertain value, variable quality, administrative inefficiencies, poor coordination, and medical errors. [2]

Reduction of medical errors is an especially important issue as a 2000 report by the Institute of Medicine estimates that between 44,000 and 98,000 Americans die each year from medical errors and private firms estimate that 195,000 people in the U.S. died due to potentially preventable, in-hospital medical errors in each of the years 2000, 2001 and 2002. [3] Use of electronic health records could help to reduce these numbers by maintaining critical patient information such as allergies and prescriptions, and also help to reduce medical costs by keeping track of all medical procedures and tests, thereby eliminating duplicated efforts.

A recent report by the Centers for Disease Control and Prevention (CDC) shows that 24 percent of doctors are using some form of electronic medical records, a 31 percent increase from use in 2001. The report also shows that only one in ten physicians are using all four basic functions of electronic medical record system-computerized orders for prescriptions, computerized orders for tests, reporting of test results, and physician notes. [4]

Although usage has increased in recent years, lack of universal standards has prevented more widespread adoption of electronic medical records. Various standards exist for specific features of electronic medical records including an XML-based patient health summary standard, a set of transaction protocols used for transmitting patient data, and a standard for representing and communicating radiology images and reporting among others. Health Level Seven (HL7) standards organization develops standards for exchange, management and integration of electronic healthcare information. HL7 Electronic Health Record (EHR) Technical Committee focuses on the development of standards to develop common language parameters that can be understood across electronic record systems to improve interoperability. [5]
The U.S. military is paving the way in the use of electronic health record systems with U.S. Military System's \textbf{AHLTA} (Armed Forces Health Longitudinal Technology Application) and the Department of Veterans Affairs’ (VA) \textbf{VistA} (Veterans Health Information Systems and Technology Architecture). While national healthcare costs have risen dramatically in recent years, the VA doubled the number of patients served in the past ten years, while only increasing its healthcare budget by 50 percent. Much of this savings can be attributed to the use of its electronic health records system, VistA, which has been in use since the mid 1990s.

1st \textbf{Transdisciplinary Conference on Distributed Diagnosis and Home Healthcare} (D2H2) held April 2-4, 2006, addressed many issues related to telemedicine including electronic/personal health records and security and standards. Although electronic health records could improve quality and cut costs of healthcare, there are many risks associated with the proposal to connect electronic health records for all Americans to create a \textbf{national health information network} (NHIN). Some concerns include the possibility of transcription errors, preventing hackers or other unauthorized persons from accessing private information and the risk of disclosure which could hinder employment or insurance coverage, and determining who is responsible for financing the systems. [6] There is also a need to set standards for common medical terms, interoperability and a standard security system. The IEEE emphasizes issues of \textbf{security and privacy} in its advocacy of a NHIN to make use of leading-edge networking technologies, such as web services, mobile communications, and multimedia communications to provide secure and reliable transport of healthcare information.

References
[2] White House. “\textit{Transforming Health Care: The President's Health Information Technology Plan.}”
[3] HealthGrades. “\textit{In-Hospital Deaths from Medical Errors at 195,000 per Year, HealthGrades' Study Finds.”}