

# Health Information Compliance Alert

## Electronic Health Records: Bolster Patient Safety and EHR Efficiency With AI

**Hint: AI can help cut administrative burdens, too.**

Duplicate patient records or overlays in electronic health record (EHR) systems pose several dangers to patients and can reduce the efficiency of providers. Researchers are exploring how artificial intelligence (AI) can help clean up EHRs to benefit both healthcare providers and their patients.

### Correct Patient Record Errors to Prevent Injuries

In a study published in 2018, conducted by The Harris Poll on behalf of Stanford Medicine, researchers surveyed more than 500 primary care physicians (PCPs) about their thoughts on EHRs. "62 percent of time devoted to each patient is being spent in the EHR and half of office-based PCPs (49 percent) think using an EHR actually detracts from their clinical effectiveness."

Additionally, a study published recently in 2022 found physicians in the United States who use EHRs spend an average of nearly two hours per day completing documentation after work hours. Providers will spend more time documenting and reviewing EHRs if duplicate patient records or identity overlays continue to populate medical record systems.

While similar, there are significant differences between duplicate medical records and overlays:

- **Duplicate patient record:** A patient is assigned more than one medical record number
- **Overlay:** Two separate patient records are identified as one individual

Duplicate patient records are often created due to a clerical error, such as a misspelled name or a transposed digit on a birthdate or Social Security number. Healthcare professionals can easily correct the errors during the registration process by checking the patient's valid identification or confirming the data elements. If a facility has multiple records for a single patient, there is a risk that healthcare professionals will attempt to treat a patient without critical information, such as a severe allergy or health condition.



"Overlays, or placing a wrong document into the wrong patient's chart, is the most severe complication of poor data management," says **Oleg Bess, MD**, co-founder and CEO of 4medica in Marina Del Rey, California. Since overlays merge information from different individuals into one patient record, the provider will have inaccurate information about the patient's medical history when treating the patient's current condition. These mistakes can be catastrophic if not corrected. "Medical errors due to overlays result in thousands of lost lives and many others suffer serious injuries. If we can integrate our easy-to-use APIs with physician EHRs, many clinical errors can be avoided, saving numerous lives and preventing even more injuries," Bess continues.

### Harness AI to Clean Up Your EHR System

Dr. Bess and researchers at 4medica have explored the effectiveness of AI with EHR systems. Prior to the company's research, 4medica used Big Data MPI engine algorithms, Referential Matching, and human data stewards and data scientist teams to reduce patient record duplication rates from 20 to 30 percent down to 2 to 3 percent. Researchers then added an AI Match Layer to the process before assigning records to data stewards, and they also experimented with

adding the AI Match Layer before and after the Referential Match component to help eliminate as many duplicate records as possible before involving the human data stewards in the process.

In 2021, Stanford researchers built an AI system to organize patient medical records and assist in data retrieval. During the nonblinded, prospective study, 12 gastroenterology clinicians reviewed medical records from June 1 to Aug. 30, 2020, and researchers compared the time and accuracy of an AI-optimized patient record against a standard patient record. The results showed the AI system saved physicians 18 percent of the time needed to answer clinical questions. Additionally, "11 of 12 physicians believed that the technology would save them time to assess new patient records and were interested in using this technology in their clinic."

### **Recognize the Value of Physicians' Time**

Incorporating AI into an EHR system to catch and help reduce the number of duplicate patient records and overlays will help lessen the stress on providers, while also improving patient safety. "When identities are fully resolved, physicians make decisions with a full and up-to-date patient record, they are more efficient, admin burden is reduced, and patient outcomes improve," Bess says.

Regarding the 2021 Stanford gastroenterology study, with providers spending nearly two hours of after-work time completing documentation, using an AI system that shaves off 18 percent of the time would allow providers to save nearly 22 minutes of documentation time per day. "As a practicing physician myself, I absolutely feel that continued improvement of the AI Match Layer will make physician lives simpler, while increasing patient safety," Bess says.

In addition to helping increase patient safety, AI could be used to prioritize and automate tasks as well as diagnose and treat patients - although the latter is currently not being widely used. "The near-term promise of AI in healthcare is as a way to promote efficiency because the amount of data generated in healthcare is simply overwhelming to navigate without help," says **Drew Ivan**, chief strategy officer of Lyniate in Boston, Massachusetts. Ivan adds that AI can help identify where physicians should focus their attention, such as a troubling section of a medical image or treating the most at-risk subset of patients.



### **Protect the Patient's Data**

For AI to function as intended, it requires an immense amount of data, and interoperability is how the data moves between the systems. "AI usually happens in a different system, so it takes interoperability to move the raw data from the EHR to the AI solution and also to move the insights generated by the AI back to a place where the clinical users can see it," Ivan says.

Are there security concerns when moving the data between the EHR and AI systems? Unlike other industries, such as retail, AI is highly regulated in U.S. healthcare. "Depending on what they're doing, AI algorithms may be classified as a medical device and need to go through U.S. Food & Drug Administration (FDA) approval," Ivan says. Since AI algorithms are developed by software, rather than humans, it's difficult to prove what the software is doing is correct or explain how the algorithms work. This is an issue in a highly regulated industry like healthcare.

AI is so ingrained in many technologies that people use every day that it can be difficult to tell if the technology is built into a platform or not. "If you sort a list of patients by appointment time, that's not AI. But if you sort it by 'risk score' - did you use an AI feature? Maybe," Ivan adds.