

How Should Drugs Be Identified in Electronic Prescribing Systems?

Electronic prescribing systems hold the promise of preventing errors in prescribing and dispensing drugs. However, these systems are not working as well as they should because there has been no standard way of precisely identifying the drug that the prescriber intends. Currently, the standard source for computer-interpretable drug identifiers in e-prescribing transactions is the Food and Drug Administration's National Drug Code (NDC) Directory. But the directory has not been accurately maintained, and, furthermore, it was designed to distinguish among drug packages and drug sources rather than to represent a physician's intent when prescribing. The ideal system of drug identifiers would have one unique identifier for every clinically distinct medication available—where *clinically distinct* refers to differences that are important to patient outcomes, not matters of production or distribution.

A viable alternative to the NDC identifiers is RxNorm, a drug nomenclature from the National Library of Medicine. RxNorm describes drugs at a clinical level, capturing the way that prescribers think about drugs. RxNorm is updated weekly by the Library of Medicine and is publicly available without charge.

A new RAND study has tested RxNorm's potential to improve the accuracy of ambulatory e-prescribing for new prescriptions, refill requests, and drug coverage information. The study found that, compared with the NDC Directory, RxNorm better reflects a physician's intent in prescribing. NDC identifiers are too specific. Because they include details about packaging and source, they often force prescriptions to be overspecified—e.g., coding for the difference between a capsule and a tablet or for a specific brand-name medication when such distinctions are not intended by the prescriber. Overspecification causes confusion among pharmacists and sometimes requires pharmacies to recontact prescribers to clarify what they really intended.

The RAND study found that RxNorm was highly complete, accurate, and usable in live testing between prescribers and pharmacies. The findings suggest that using RxNorm could increase the accuracy of the data that pharmacists receive, thereby improving communication between prescribers and pharmacies and giving both parties more confidence in the system. RxNorm could also be used to more effectively represent drug coverage information, since for the vast majority of medication concepts, drug coverage is the same for all of the different products that are available. Furthermore, even when coverage differs among the products that could be used for the same medication concept, pharmacists should be able to interchange them to the lowest-cost version available.

Based on the study results, the RAND team recommends that RxNorm be adopted as the primary drug identifier in e-prescribing systems. Doing so would eliminate one of the major barriers to successful e-prescribing and enable e-prescribing systems to provide other benefits, including more-comprehensive information about drug costs and more-accurate inventories of the drugs that a patient is taking.

Getting the level of drug identifier right is essential for accurate, efficient e-prescribing. Attention to detail in this case is also a microcosm of the comprehensive attention to technical details that will be required to achieve “semantic interoperability,” which is the preservation of meaning as data are moved between systems. Without semantic interoperability, health information technology cannot fulfill its promise of increasing patient safety and generating efficiencies.

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