Comprehensive Analysis of Electronic Prescribing Quality Related-Incidents

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Objectives
The main goal of this project was to analyze quality related events and errors related to e-prescribing that affect community pharmacist and patients to develop best practice recommendations for improving patient safety. The aims were to: 1) examine the frequency, type, and contributing factors of e-prescribing quality events reported to the Pharmacy Quality Commitment (PQC) System and the Pharmacy and Provider eprescribing Experience Reporting (PEER) Portal; 2) determine the potential impact of Surescripts e-prescribing "ideal prescription" guidelines adoption in preventing e-prescribing quality problems and errors; 3) identify error-prone medications for electronic prescribing and compare current national and international guidelines for electronic display of medication information to assess their scope in potentially preventing look alike sound alike (LASA) errors in the electronic setting; and 4) conduct a reliability analysis of the e-prescribing reporting system.

	Methods
Design	This was a retrospective analysis of extracted e-prescribing related events reported to PQC and PEER Portal between January 2010 and January 2015. Descriptive statistics were calculated for variables of interest from each data source, PQC and PEER portal, independently. In addition, a combined PQC and PEER Portal dataset was created to estimate frequencies and percentages for variables that were collected using similar taxonomies in both reporting portals. A random sample of the combined PQC and PEER dataset was analyzed by determining the proportion of e-prescription events that would be considered preventable if the prescriptions were compliant with the elements of the "ideal e-prescribing order."
Study endpoints	• Common e-prescribing incidents reported • List of LASA drugs involved in e- e-prescribing incidents • Recommendations for re-designed of E-prescribing incident reporting web portals

Results
• A total of 589 events were reported to the PEER Portal from 2010 to 2015. Patient directions problems were the most frequent type of incident (n=210) of which 10% (n=21) reached the patients. Quantity selection (n=158) and drug selection (n=96) were the next most frequently reported events, 20% of which reached the patient.
• From a sample of 550 PQC reports, the most frequent event type reported was incorrect directions (23.3%, n=128) followed by incorrect prescriber (17 %), incorrect drug (15%) and incorrect strength (12%).
• A total, 429 of 1,139 events were analyzed and classified as preventable or not preventable. Three strategies were identified as potential error prevention strategies for over two thirds of the quality related issues. These were: 1) use of standardized drug descriptions; 2) use of valid prescription quantities; and 3) maintenance of accurate prescriber and pharmacy information in the Surescripts directory.

Conclusion
Software developers and vendors have the potential to greatly impact the number of e-prescribing related incidents by adopting three strategies in their systems: 1) use of standardized drug descriptions; 2) use of appropriate prescription quantities; and 3) maintenance of up-to-date prescriber and pharmacy information in the Surescripts directory. Adopting these standards may aid in reducing errors, creating better health outcomes, increased safety, and better patient relationships. The use of Tall-man lettering should be considered in the electronic display of drug names on e-prescribing systems.