

Evaluation of an Electronic Module for Reconciling Medications in Home Health Plans of Care



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CURRENTLY home health referrals involve the exchange of paper documents between referring providers and home health agencies. In these exchanges medication lists are often manually annotated to address discrepancies between records. This manual process is error prone and inefficient, leading to ambiguities in the patient record and placing patients' safety at risk. In this project we developed an electronic medication reconciliation module that was integrated into a simulated EHR and intended for use by VA providers when managing plans of care returned by home health. We evaluated the effects of this module on the accuracy and efficiency of addressing medication discrepancies.

Methods: Nineteen physicians who had experience in managing home health referrals were recruited to participate in a within-subjects experiment. Participants completed two blocks of three clinical cases each. In each block of cases the first case was an orientation case, this was followed by two cases for which the data was used for analysis. The first block of cases (mixed paper/electronic) simulated current practice: reconcile medication discrepancies between a paper plan of care (CMS 485) returned from home health and a simulated electronic health record. For the second block of cases (medication reconciliation module) participants used the electronic only medication reconciliation module that was integrated into the simulated electronic health record. The order of the cases was randomized for each participant within these blocks. Repeated measures ANOVA was used to test our hypotheses that the medication reconciliation module would improve accuracy of reconciliation, and decrease time to complete cases. Provider satisfaction was evaluated using a composite scale derived from a post experiment questionnaire. Participants also provided qualitative feedback regarding the design and functionality of the electronic tool.

Results: Participants left more discrepancies unaddressed in the mixed paper/electronic than when using the electronic only medication reconciliation module (1.5 vs. 0.45, $F=21.9$, $p<0.0001$), supporting our hypothesis that the electronic tool would improve reconciliation accuracy. However, individuals took the same amount of time to complete cases in each condition (258.7 vs. 260.4 seconds, $F=0.01$, $P=0.92$), this was contrary to our hypothesis that the electronic system would decrease time to complete cases. Based on participants' verbal feedback, we hypothesize that by providing assistance with the mechanics of reconciliation, the electronic only medication reconciliation module afforded participants 'found time' to forage in the record for information related to the appropriateness of medications. This post-hoc hypothesis was supported by examining the number of times participants switched between tabs in the mixed paper/electronic vs. electronic only medication reconciliation module conditions in the simulated EHR (7.2 vs. 15.3, $F=12.4$, $P<0.0001$). Finally the hypothesis that the medication reconciliation module would increase provider's satisfaction was supported by a mean score of 6.4/7 on the composite satisfaction scale and by the fact that 17/19 participants expressed a preference for the electronic only medication reconciliation module over the current mixed paper/electronic process.

Conclusion: We present an evaluation of an electronic medication reconciliation module integrated into the EHR. The system improved the accuracy and providers' satisfaction with medication reconciliation in home health plans of care. Further work, particularly in addressing our unexpected finding of increased searching of the EHR when using the medication reconciliation module, will be discussed.

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