Modifying the order of medication search results in an electronic health record to increase physician generic prescribing behavior

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Introduction: Prescription drug costs accounted for 10% of national health expenditure in the United States in 2016[1]. Generic drugs have the potential to eliminate significant spending when appropriately substituted[2], and are associated with greater patient adherence[3]. Malhotra et. al. showed that reengineering an e-prescribing interface to convert providers' selections of branded drugs to generic drugs significantly increased the proportion of generic prescriptions[4]. However, this approach may not be appropriate for other workflows, such as when providers must choose between non-equivalent options. We present a simple intervention whereby generic options are promoted within search results while still allowing providers to choose brand or generic options. The intervention significantly increased the rate of generic prescribing without requiring either changes to the design of the ordering module or dedicated provider communication.

Methods: The home-grown electronic health record for a national primary care clinic system allows for search results to be reordered based on matching against arbitrarily defined medication synonyms. Branded medication names were listed as synonyms for their respective generic medications, prompting the generic to be promoted when a physician searches for its corresponding branded medication. This change was made for four medications in May 2018: valacyclovir (Valtrex), escitalopram oxalate (Lexapro), amoxicillin-potassium clavulanate (Augmentin), and atorvastatin (Lipitor). New prescriptions were tracked for two months before and after, and were analyzed using Pearson's chi-squared test with the SciPy open source package for Python version 0.19.1.

Results: In the measurement period, 18,639 prescriptions were made for the branded or generic versions of the test medications, with each medication showing a significant increase in the proportion of generic prescriptions ($p < 0.001$). Amoxicillin-potassium clavulanate showed the largest increase, with an absolute increase of 59.75%, followed by valacyclovir (21.1%), escitalopram oxalate (11.8%), and atorvastatin (4.5%).
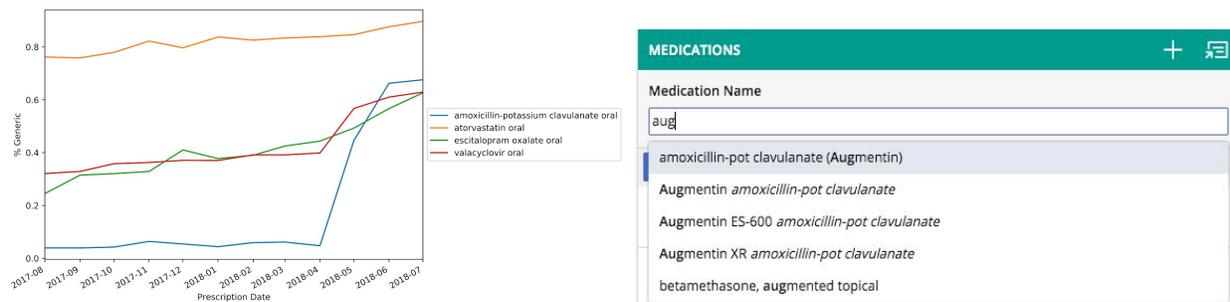
Conclusions: Changing the position of equivalent generic medications in search results significantly increases the generic prescribing rate without subverting physician intent. This suggests that minor user experience changes such as the list ordering can be used to nudge clinicians into making higher quality and better value decisions with their patients.

References

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