
New medication without seeking PGx information[a]
Lack of use of ancillary staff to consider PGx information[b]
Lack of disease-based PGx prescribing[c]
Time constraints[d]
Physician Behavior Inconsistencies
Missed Opportunities
Passive (vs Active) Implementation Model
Lack of EMR Integration
Potential alerts for new medications not delivered[e]
Risk alerts not delivered due to lack of login[f]

Suppl. Fig. 2

Supplementary Figure 2. Missed Opportunities for Pharmacogenomic Adoption. Patterns of suboptimal utilization are shown—representing both delivery-model limitations of our implementation and physician behavior inconsistencies—suggesting opportunities for ongoing iteration and intervention to increase future adoption. First, because we chose a passive resulting approach, providers sometimes did not see potentially important alerts, primarily because of lack of log-in. Because of this, across the 711 visits at which physicians did not log into GPS (31% of all study visits), 1298 total potential alerts were not delivered, with 39% of those representing yellow or red alerts (only n=7 were distinct red lights, with six being non-response PPI signals). Most prominently among the undelivered alerts were eight unique yellow lights for simvastatin, and one yellow light for clopidogrel. In order to mitigate this problem, during the course of this study a small number (4/17) of our early adopters themselves instituted programs within their clinics wherein they had clinic assistants always pre-print pharmacogenomic results from the CDS system for their manual review while seeing patients. Interestingly, when these physicians employed this type of assistance from ancillary clinic personnel for pharmacogenomic integration, the number of 'missed alerts' was almost zero. As one primary example of subsequent implementation iteration, and in part because of these results, the previously stand-alone GPS has now been integrated with our institutional EMR. Secondly, providers only rarely proactively utilized the GPS during new medication prescribing. Pharmacogenomic information would have been available for 27% of these unsearched instances. Fortunately, none of the unsearched new medications were prescribed to patients who would have had a red alert for the chosen drug. Lastly, several use constraints were identified that caused behavioral inconsistencies for some providers. Notes: [a]Out of 286 new medications that were prescribed when physicians logged in, the search functionality/alternative medication column was used 62 times. That meant 224 new medications were prescribed during a login visit without utilizing search functionalities. [b]Four physicians routinely accessed pharmacogenomic information printed out from the GPS by ancillary staff. [c]Out of the 1568 login visits during the study period, a disease search was conducted 26 times. [d]Of the visits where a provider logged in, there were 98 distinct risk alerts that were viewed but not clicked to view the more detailed clinical decision supports. [e]Over the course of the study period, 103 new medications were prescribed without a login. Pharmacogenomic information was available for 32 of these drugs. [f]There were 253 distinct red and yellow alerts that were never delivered due to lack of login.