Real-time improvement in the relevance of prescriptions for elderly patients: impact of the Vidal Focus automated system.

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INTRODUCTION

Optimizing the relevance of prescriptions is a key challenge in improving the quality and efficiency of care. Automated analysis of prescription data makes it possible to identify, in real time, situations that deviate from recommendations. The integration of a signal at the time of prescription provides an immediate window of opportunity for high-impact action[1].

The Vidal Focus device[2] continuously analyzes prescription data and applies rules[3,4] to identify 13 risk situations in patients over 65 years of age: proton pump inhibitors (PPIs), nonsteroidal anti-inflammatory drugs (NSAIDs), benzodiazepines, statins alone, weak opioids, insufficient SMR, anticholinergics, decongestants, bisphosphonates, muscle relaxants, metopimazine, domperidone, statins and fibrates. The prescriber then receives a notification, allowing them to correct the prescription in real time.

OBJECTIVES

To measure, under real conditions within the WEDA software, the impact of the Vidal Focus system designed to **detect and flag potentially inappropriate prescriptions**.

Primary Objective :

Evaluate the clinical impact, technical feasibility, and acceptability of the Vidal Focus CDSS in real-world clinical practice by measuring immediate prescription correction rates among general practitioners.

Secondary Objectives :

Describe the clinical characteristics of the study cohort, characterize the most frequent notification rules, investigate variables predicting real-time correction (including prescription size and potential notification fatigue), and evaluate temporal trends.

METHODS AND STUDY DESIGN

Study Cohort :

A retrospective, real-world observational study was conducted based on prescriptions issued between February and October 2025 by 8,000 general practitioners in France utilizing the WEDA EHR software.

CDSS System :

The integrated Vidal Focus system screens prescriptions in real time for patients aged ≥ 65 years.

Outliers :

Weights < 35 kg or treatment durations > 1 year were recoded as missing data. Real-time notifications were displayed to clinicians with direct edit capability.

Statistical Analysis :

Descriptive statistics characterized the patient selection flowchart and demographic variables. Independent predictors of real-time notification correction were identified in two steps: a LASSO[5] regression was used for variable selection among all notified prescriptions, followed by a multivariable logistic regression model fitted on the preselected variables.

DISCUSSION

The interpretation of notification frequency remains challenging, as it may be influenced by both the performance of the algorithm and the actual occurrence of Potentially Inappropriate Prescribing. The wide variation in correction odds across drug classes (e.g., Metopimazine OR = 130.28 vs. Statins OR = 1.19) proves that physician response is heavily driven by clinical guidelines and patient-specific benefit-risk evaluation. Overriding a notification is often a deliberate, justified medical choice rather than a system failure. Further investigation based on a detailed assessment of patients medical records would help clarify the respective contribution of these factors.

Similarly, correction rates cannot be considered a direct measure of the effectiveness of the notification system alone. Changes in prescribing practices may also be driven by external influences, such as professional training, educational resources, and initiatives from health authorities or professional medical societies aimed at improving prescribing appropriateness.

CONCLUSION

This study demonstrated the feasibility of the automated system on a sample of 8,000 physicians, its technical robustness, and its immediate impact on the appropriateness of prescriptions. Its high level of acceptability and its ability to process a large volume of prescriptions demonstrate measurable improvements in patient care.

These results suggest that an enhanced version of the system, incorporating recommendations for action, a prioritization of rules, and reinforced learning mechanisms, could make a major contribution to national challenges in terms of relevance, harmonization of practices, and efficiency of care.

RESULTS

PRESCRIPTIONS SELECTION FLOWCHART

Out of **1,163,857** elderly prescriptions analyzed, **37.31%** triggered at least one pharmacological notification representing **434,212** identified high-risk prescriptions.



Figure 1 : Flowchart

BASELINE DEMOGRAPHICS OF THE COHORT AND A COMPARISON OF PRESCRIPTIONS WITH AND WITHOUT NOTIFICATIONS

Notified prescriptions were strongly associated with a higher number of distinct drugs prescribed (mean 5.77 vs 3.63, $p < 0.001$) and female gender (58.14%).

Variable	With Alert N = 434,212	Without Alert N = 729,645	Total N = 1,163,857
Female gender	252,435 (58.14%)	413,788 (56.71%)	**666,223 (57.24%)**
Male gender	181,777 (41.86%)	315,857 (43.29%)	**497,634 (42.76%)**
Age 65 - 75 years	187,498 (43.18%)	343,620 (47.09%)	**531,118 (45.63%)**
Age 75 - 85 years	170,949 (39.37%)	254,400 (34.87%)	**425,349 (36.55%)**
Age > 85 years	75,765 (17.45%)	131,625 (18.04%)	**207,390 (17.82%)**
Mean distinct medications (± SD)	5.77 (± 3.75)	3.63 (± 3.50)	**4.43 (± 3.74)**
Median treatment duration	91.31 days	30.44 days	**84.00 days**

Table 1 : Baseline cohort & Notification demographics

NOTIFICATION CORRECTION

30,968
prescriptions corrected

7.13%
overall correction rate

30,968 out of 434,212 prescriptions were immediately corrected by the prescribing physician in real time, yielding an overall correction rate of **7.13%**.

The most frequent notifications concerned PPIs (159,684), NSAIDs (134,693), benzodiazepines (110,572), and statins (93,611). For these four rules, the number of inappropriate prescriptions corrected was 7,246 (4.5%), 6,872 (5.1%), 5,126 (4.6%) and 2,437 (2.6%) respectively. Certain situations were identified with higher correction rates: statins and fibrates with 455 notifications including 72 corrections (15.8%), and domperidone with 1,138 notifications including 137 corrections (12.0%).

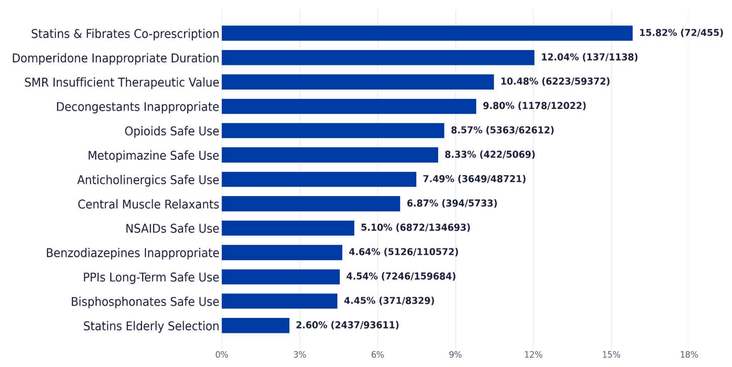


Figure 2 : Distribution of real-time clinical correction rates across different pharmacological rules.

NOTIFICATIONS TRIGGERED VERSUS CORRECTED

The percentages shown on the y-axis correspond to the percentage of correction for each pharmacological rule (Figure 2). The x-axis shows the percentage of prescriptions complying with the rule.

For example, **159,684 (36.78%)** prescriptions triggered the PPI notification and among these, **7,246 (4.54%)** have been corrected.

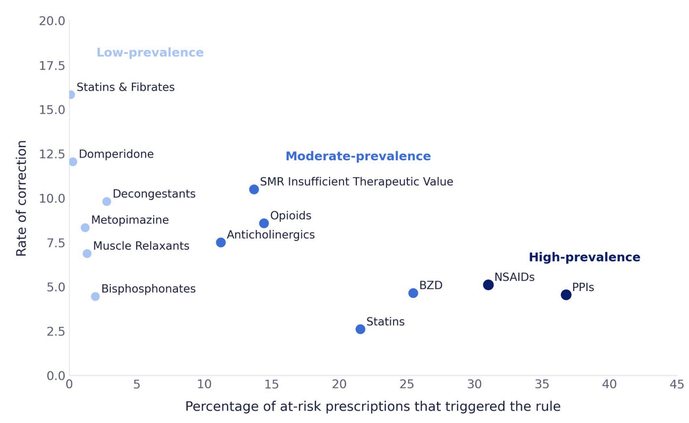


Figure 3 : For a given rule, the percentage of corrected prescriptions compared with the percentage of notifications triggered.

ACCEPTABILITY

High acceptance rate

The disconnection rate, corresponding to the deactivation of notifications, remains very low (< 1%), demonstrating excellent integration into usage patterns.

FACTORS INFLUENCING PRESCRIPTION CORRECTION — MULTIVARIABLE ANALYSIS

The model revealed key insights:

(1) Notification Fatigue: the number of triggered rules on a single prescription was negatively associated with correction (OR = 0.73, $p < 0.0001$), indicating that multiple notifications diminish clinician responsiveness.

(2) Specific Notification Types: notifications for Metopimazine (OR = 130.28) and Central Muscle Relaxants (OR = 89.35) were exceptionally strong positive predictors for correction, whereas PPIs (OR = 31.59) and Benzodiazepines (OR = 15.82) also significantly increased correction odds.

Variable /Clinical Notification	Odds Ratio (OR) [95% CI]	P-value
Metopimazine	130.28 [89.50; 189.65]	< 0.0001
Bisphosphonates	89.35 [68.43; 116.66]	< 0.0001
PPIs	31.59 [29.58; 33.74]	< 0.0001
Biphosphonates	27.41 [21.10; 35.61]	< 0.0001
Domperidone	17.44 [12.27; 24.80]	< 0.0001
Benzodiazepines	15.82 [14.78; 16.92]	< 0.0001
Opioids	6.71 [6.41; 7.02]	< 0.0001
Decongestants	5.65 [5.18; 6.16]	< 0.0001
SMR Insufficient	5.45 [5.21; 5.69]	< 0.0001
Statins and fibrates	4.64 [3.61; 5.95]	< 0.0001
Anticholinergics	4.25 [4.05; 4.45]	< 0.0001
Statins	1.19 [1.15; 1.24]	< 0.0001
Number of Lines per Prescription (+1 unit)	1.10 [1.09; 1.11]	< 0.0001
Total Rules Triggered (+1 unit)	0.73 [0.72; 0.75]	< 0.0001

Table 2 : Factors associated with prescription correction — Multivariable logistic regression

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ABBREVIATIONS

BZD Benzodiazepines
CDSS Clinical Decision Support System
NSAIDs Non-Steroidal Anti-Inflammatory drugs
OR Odds Ratio
PPI Proton-Pump Inhibitors