

Reducing Friction with Medication Ordering: Aligning Epic Preference Lists with Clinical Practice

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Background

Electronic Health Record (EHR) systems such as Epic are integral to clinical education and workflow. When medication preference lists lack accurate defaults, providers and learners experience ordering inefficiency (friction). At Carilion Clinic, some medication orders are edited 100% of the time, highlighting inefficiencies and a disconnect between system design and clinical practice. This project aims to address this challenge through a targeted informatics intervention aligned with the TEACH mission to foster educational innovation and improve the clinical working and learning environment.

Methods

We conducted a pre-post intervention study at an academic medical center using the Epic EHR. Baseline data were collected over three months, followed by a two-month post-intervention period. We analyzed all medication orders placed from the medication preference list, focusing on the frequency and nature of modifications to default settings.

For each medication, we identified all ordering variants—defined as unique combinations of dose, route, frequency, dispense, quantity, and refills—and determined the most frequently used variant. The intervention involved updating preference list defaults to match the most common variant for each. Chronic medications were standardized to a 90-day supply with three refills, while short-term medications were updated to reflect typical course durations (e.g., 5–10 days).

We compared the rate of order modifications before and after the intervention.

Results

18,000
CHANGES SAVED
OVER
10 HOURS OF
PHYSICIAN TIME

Usage Data							
Display Name	Order Type	Order Record	Number of Orders	Total Order Changes	Average Order Changes Per Order	Number of Variants	% of Orders with Unchanged Default
insulin glargine (U-300) conc. (T	Medications	ERX 185721	11	60	5.45	11	0
efedipine 0.2% cream	Medications	ERX 610154	6	32	5.33	6	0
ibuprofen (ADVIL/MOTRIN) 100 i	Medications	ERX 10246	63	323	5.13	38	0
terous sulfate 75mg (15mg elen	Medications	ERX 166799	8	40	5	8	0
ETOSTITX	Medications	ERX 78883	5	25	5	4	0
insulin glargine (U-300) conc. (T	Medications	ERX 192848	1	5	5	1	0
glucosamine chondroitin maain	Medications	ERX 87252	1	5	5	1	0
hydrocortisone 10% cream (con	Medications	ERX 680022	1	5	5	1	0
all purpose nipple ointment 30 g	Medications	ERX 610473	18	88	4.89	11	0
GLUCOMETER TEST STRIPS	Medications	ERX 28705	666	3227	4.85	164	1.95
semaglutide (2.5 mg/mL) 2 mL	Medications	ERX 710644	13	60	4.62	11	0
insulin detemir (LEVEMIR) Flex To	Medications	ERX 55260	4	18	4.5	4	0
phenytoin (DILANTIN) 100 mg c	Medications	ERX 78891	2	9	4.5	2	0

Pre-intervention usage data for commonly ordered medications

Each row represents a single medication showing: Total orders, Number of changes per order, Number of ordering variants, Percentage of orders placed without modifying the default.

Some medications showed no orders placed using defaults, indicating every order required manual edits. These data informed the identification of medications for targeted updates, as described in the Methods section.



Comparison of total medication orders and associated order changes before and after the intervention

Overall order volume increased by 8.5% (105,000 → 113,881), the total number of order changes decreased by 7.8% (140,000 → 129,000). This represents approximately 18,000 fewer changes than expected, attributable to improved default settings. Assuming a conservative estimate of 2 seconds per change, this equates to over 10 hours of physician time saved in just two months—demonstrating meaningful workflow improvement from a low-effort, system-level intervention.

Conclusion

Maintaining up-to-date, user-aligned preference lists in Epic may reduce ordering friction, support efficient workflow, and model best practices for learners. This low-cost, high-impact intervention seeks to demonstrate how informatics-driven improvements can enhance both provider experience and health professions education. Sustaining these efforts through regular feedback loops between educators and IT teams may further TEACH's mission of advancing educational excellence through innovation and system optimization.

Further Research

1. Expand scope to include laboratory, radiology, and procedure orders
2. Iterate and refine by reanalyzing variant frequency to further reduce ordering friction
3. Identify additions by analyzing frequently ordered medications not currently on preference lists

These next steps support continuous improvement and broader application of preference list optimization across clinical domains.

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