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Research and Applications

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Impact of implementing electronic prior authorization on medication filling in an electronic health record system in a large healthcare system

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ABSTRACT

Objective: Medications frequently require prior authorization from payers before filling is authorized. Obtaining prior authorization can create delays in filling prescriptions and ultimately reduce patient adherence to medication. Electronic prior authorization (ePA), embedded in the electronic health record (EHR), could remove some barriers but has not been rigorously evaluated. We sought to evaluate the impact of implementing an ePA system on prescription filling.

Materials and Methods: ePA was implemented in 2 phases in September and November 2018 in a large US healthcare system. This staggered implementation enabled the later-implementing sites to be controls. Using EHR data from all prescriptions written and linked information on whether prescriptions were filled at pharmacies, we 1:1 matched ePA prescriptions with non-ePA prescriptions for the same insurance plan, medication, and site, before and after ePA implementation, to evaluate primary adherence, or the proportion of prescriptions filled within 30 days, using generalized estimating equations. We also conducted concurrent analyses across sites during the peri-implementation period (Sept–Oct 2018).

Results: Of 74 546 eligible ePA prescriptions, 38 851 were matched with preimplementation controls. In total, 24 930 (64.2%) ePA prescriptions were filled compared with 26 731 (68.8%) control prescriptions (Adjusted Relative Risk [aRR]: 0.92, 95%CI: 0.91–0.93). Concurrent analyses revealed similar findings (64.7% for ePA vs 62.3% control prescriptions, aRR: 1.03, 95%CI: 0.98–1.09).

Discussion: Challenges with implementation, such as misfiring and insurance fragmentation, could have undermined its effectiveness, providing implications for other health informatics interventions deployed in outpatient care.

Conclusion: Despite increasing interest in implementing ePA to improve prescription filling, adoption did not change medication adherence.

Key words: health informatics, electronic health records, implementation science, medications, medication adherence

INTRODUCTION

Complex and fractured communication among healthcare practices, pharmacies, and insurers in the United States can increase healthcare costs and worsen health outcomes for patients.[1] Research has shown in particular that healthcare practices spend approximately $80 000 per physician per year on interactions with payers; much of that effort goes towards meeting prior authorization requirements.[2,3]

The goal of prior authorization is to channel medication use so that patients who meet prespecified criteria for clinical appropriateness will receive the selected medication, while other patients will be directed to an alternative medication, or no medication if one is not indicated. In practice, however, prior authorizations can create administrative burden for physicians, pharmacies, and patients, generating delays in prescription filling that may prevent those patients who meet criteria from getting potentially beneficial medications and may not even reduce costs.[4–7] These prior authorizations also come at a price of worsening primary medication nonadherence, defined by a patient not filling a new medication that was prescribed.[8,9] On average, 25% of new prescriptions go unfilled.[10,11] Despite these issues, prior authorizations are now required for more than 20% of medications on Medicare Part D plans.[12,13]

Electronic prior authorization (ePA) information technology was recently introduced as a potential way to improve the efficiency of this process.[14] Problems with traditional prior authorizations may arise from the delayed timing of prior authorizations in clinical practice; prescribers and patients are unaware of a prior authorization requirement until the patient attempts to retrieve the medication at the pharmacy. In contrast to traditional prior authorizations, ePA links with patients' insurance formularies at the time of electronic prescribing to allow prior authorizations to be processed within the electronic health record (EHR) system.[15] This internal processing may reduce some barriers created by traditional prior authorizations, such as the need for phone calls or faxing among pharmacies, practices, and payers for processing.[16] Although ePA integration has been proposed for many years, and has begun being implemented, its impact has not been rigorously evaluated.[12,14]

If ePA is shown to improve communication between providers, payers, and pharmacies, it could improve adherence to medication. Adherence is a growing concern for prescribers and payers, in part because of its association with performance incentives and plan ratings.[17,18]

Thus, we sought to evaluate the early impact of ePA technology implementation on primary adherence to medication using data from a large US healthcare system. We examined the association between ePA implementation and the proportion of prior authorization-requiring prescriptions that were filled by patients as well as impact on the time between prescription ordering and filling.

MATERIALS AND METHODS

Overview

This retrospective cohort study combines data from a large integrated delivery system with pharmacy filling data to evaluate the impact of ePA on primary medication adherence. Sutter Health, a large integrated health system in northern California, adopted an ePA application embedded in its current Epic EHR prescribing system in 2 different phases. This staged implementation facilitated the ability to evaluate the impact of electronic prior authorization using 2 sets of comparisons across patients and clinics.

Traditional prior authorizations are typically triggered by the pharmacy informing the prescriber that the prescription is unable to be filled and requires a prior authorization. The prescriber then has to locate and complete the prior authorization form for the medication for the specific insurer (ie, pharmacy benefit manager [PBM]) and then submit it to the PBM for approval generally via fax or through a separate online submission system like covermymeds.com. The prescriber then receives notification back from the PBM typically via a fax or a phone call that the prescription has been approved or denied; if approved, they then resubmit the prescription to the pharmacy. If denied, the request returns to the prescriber to consider alternatives or an appeal.

The implementation of ePA enables an earlier check whether a prescription needs a prior authorization by a specific PBM. For medications in a participating PBM, when ordering the medication, the prescriber is notified through an in-basket message delivered within the EHR that a prior authorization is required and is directed to complete the prior authorization form electronically, rather than waiting for the prescription to be rejected by the pharmacy. The completed electronic prior authorization form is sent to the PBM for approval. If the prior authorization is approved, then the patient is informed by the pharmacy when the prescription is filled and ready to pick up; if denied, the request for changing to an alternative medication or an appeal created by PBM is sent to the prescriber through an EHR in-basket message. However, not all of the PBMs participate in ePA; in these cases, the prescriber would not know if the medication required a prior authorization and so they would follow the previous model of traditional prior authorization submissions.

The ePA system was implemented across 8 different Sutter Health Medical sites: sites consist of several clinics that belong to the same network of affiliated physicians. The ePA system launched in 2 medical sites ("early implementation sites") on September 1, 2018, and in 6 remaining sites on November 1, 2018 ("late implementation sites") (Figure 1; Supplementary Appendix Table 1).

Data sources and population

We used data between March 2018 and June 2019, including EHR data from Sutter Health. This EHR data recorded all of the electronic prescriptions issued, regardless of whether they were eventually filled or not at retail pharmacies and also included information on ePA firing, order date, medication name, strength, formulation, medical site, and demographic information about patients, including age, sex, race, ethnicity, and type of insurance.

The prescription filling data came from Surescripts, the largest vendor supporting electronic prescribing in the United States. These data were embedded in the EHR during the study. As of 2019, 95% of US pharmacies used Surescripts for prescribing,[19] and it is used widely in California by community pharmacies. Each Surescripts transaction recorded information on dispense date, medication name, strength, and formulation, dispensed amount, days supplied, and pharmacy and patient identifiers. Thus, the study sample included all patients who received $\geq$1 electronic prescription from an eligible Sutter Health site during the study periods.

Electronic prior authorization technology

We identified medication orders that were flagged as requiring prior authorization for patients seen at these Sutter Health sites and that were sent to retail pharmacies through the Surescripts ePA process specifically between September 2018 and June 2019. Medications requiring traditional, nonelectronic prior authorization are often not

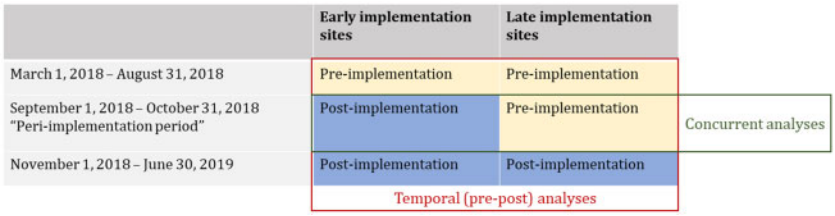

Figure 1. Implementation and analysis of electronic prior authorization.

known until they are processed for payment at the pharmacy (ie, for some insurers, there is no indication in the EHR that prior authorization is required). Prior authorization requirements are set by the prescription drug insurance plan. Therefore, we defined potential control prescriptions as those that were the same medication for a patient with the exact same insurance plan based on the EHR, as an ePA prescription when ePA was not available at the clinical sites.

Primary medication adherence

The primary outcome was primary adherence to medication, which was defined as a dispensation in the pharmacy data for that medication within 30 days after the medication order date.[10,11,20] A medication was considered as filled when there was a match within the Surescripts data for a medication with the same generic name and route of administration (eg, oral). We chose this as the primary outcome because changes within the same generic form of a medication represent the types of substitutions typically conducted by retail pharmacies without needing an additional prescription or clarification from the prescriber.[21] In other words, prescriptions for which a capsule was ordered but a tablet was dispensed were considered interchangeable. In sensitivity analyses of this outcome, we considered the medication as filled when it was for the same therapeutic class (eg, beta-blockers), as these would typically be considered appropriate alternatives, but would require a new verbal, electronic, or written prescription from a prescriber.[21] In the event that there were multiple prescriptions meeting these criteria, we selected the one closest to the medication order date.

For each of these outcomes, we also calculated the number of days between when the prescription was ordered by the provider and when it was filled by the pharmacy (within 30 days). If the prescription was ordered and filled on the same day, the time until filling was 0 days.

Statistical analysis

We conducted 2 different types of comparisons: (1) a temporal (prepost) analysis of ePA versus control non-ePA prescriptions before and after implementation, and (2) a concurrent analysis of ePA vs non-ePA prescriptions within the 2-month peri-implementation period between early sites and similar late implementation sites (Figure 1).

For both the temporal (prepost) and concurrent analyses, we matched ePA prescriptions with control, non-ePA prescriptions. Specifically, for the temporal comparison, we conducted 1:1 exact matching within medical site, medication name, and insurance benefit plan and payer (eg, based on the exact name of the benefit plan for each payer) using sampling without replacement. In other words, if >1 control prescription met matching criteria, 1 was randomly selected and was only included once. As sensitivity analyses, we also (1) exact matched within patient and (2) selected the first eligible ePA order for patients with >1 ePA prescription, to eliminate any patient-level clustering.

For the concurrent analyses, we exact matched ePA prescriptions (from early implementation sites) with control prescriptions (from late implementation sites) by calendar month, medication name, and exact insurance benefit plan and payer using 1:1 sampling without replacement. As above, if >1 control prescription met matching criteria, 1 was randomly selected. By definition, analyses could not be matched within patient, as 99.9% of ePA orders were for patients that only sought care at 1 medical site in this time period. Within these concurrent analyses, we excluded 3 of the medical sites in the late implementation, as they were primarily acute care locations while the 2 medical sites that were early implementation were primary care locations (Supplementary Appendix Table 1). In sensitivity analyses, we excluded duplicate patients, selecting the first eligible order.

We first described primary adherence rates between matched ePA and control prescriptions. For the primary temporal and concurrent analyses, we then used generalized estimating equations (GEE) to estimate the proportion of primary adherence for ePA prescriptions compared with control prescriptions with a log-link function and Poisson-distributed errors, adjusting for multiple patient observations, which generate estimated relative risks and are appropriate when outcomes are common (eg, ≥5%).[22] We also examined the most common medications and classes triggered through ePA processes and their rates of filling to evaluate implementation.

In secondary and sensitivity analyses, to compare the mean number of days between prescription order and dispensing in the matched cohorts, we used generalized estimating equations with a log link and Poisson-distributed errors, also adjusting for multiple patient observations. For sensitivity analyses, we repeated the same approach, but eliminated the need to control for patient-level clustering as applicable, and conducted additional sensitivity analyses also adjusting for patient age, sex, race, ethnicity, and prescribing provider specialty. We also present the key results stratified by age (<65 or ≥65 years), sex, race (White, Black, Asian, Other), ethnicity (Hispanic, Non-Hispanic), and insurance type (Commercial, Medicare, Medicaid).

All analyses were performed using SAS software, version 9.4 (SAS Institute, Cary, NC). For each analysis, we used 2-sided comparisons with alpha < 0.05 for statistical significance. Both the Institutional Review Board of Brigham and Women's Hospital and Sutter Health's Institutional Review Board approved this study.

RESULTS

Between March 1, 2018 and June 30, 2019, 74 546 total prescriptions were ordered through the ePA process. For the temporal (prepost) cohort, 38 851 ePA prescriptions were matched with 38 851 control, non-ePA prescriptions. For the concurrent cohort, of 4895

Table 1. Characteristics of matched electronic prior authorization and control prescriptions

	Temporal (prepost) cohort		Concurrent cohort	
	Electronic prior authorization (n = 38 851)	Control (n = 38 851)	Electronic prior authorization (n = 2025)	Control (n = 2025)
Patient sex, Female n (%)	22 595 (58.2)	22 523 (58.0)	1085 (53.6)	1147 (56.6)
Patient age, mean (SD)	58.3 (17.2)	57.5 (17.7)	58.6 (17.7)	57.8 (17.7)
Patient race, n (%)				
White	24 556 (63.2)	24 734 (63.7)	1199 (59.2)	1492 (73.7)
Black	1481 (3.8)	1513 (3.9)	67 (3.3)	70 (3.5)
Asian	4760 (12.3)	4551 (11.7)	334 (16.5)	96 (4.7)
Other	8054 (20.7)	8053 (20.7)	425 (21.0)	367 (18.1)
Patient ethnicity, n (%)				
Hispanic	4198 (10.8)	4126 (10.6)	154 (7.6)	220 (10.9)
Patient insurance[a], n (%)				
Commercial	33 974 (87.5)	33 974 (87.5)	1792 (88.5)	1792 (88.5)
Medicaid	3206 (8.3)	3206 (8.3)	86 (4.3)	86 (4.3)
Medicare	14 618 (37.6)	14 618 (37.6)	805 (39.8)	805 (39.8)
Provider specialty, n (%)				
Family or internal medicine	22 954 (59.1)	21 997 (56.6)	1011 (49.9)	1239 (61.2)
Cardiology	699 (1.8)	819 (2.1)	37 (1.8)	42 (2.1)
Dermatology	1823 (4.7)	1813 (4.7)	91 (4.5)	72 (3.6)
Endocrinology	1584 (4.1)	1628 (4.2)	100 (4.9)	77 (3.8)
Gastroenterology	890 (2.3)	817 (2.1)	71 (3.5)	40 (2.0)
Neurology	1107 (2.9)	1187 (3.1)	58 (2.9)	60 (3.0)
Rheumatology	1255 (3.2)	1221 (3.1)	93 (4.6)	54 (2.7)
Other	8529 (22.0)	9369 (24.1)	564 (27.9)	441 (21.8)

Abbreviations: SD, standard deviation.
[a]Some patients have multiple insurances.

eligible ePA prescription orders during the peri-implementation period, 2025 prescriptions were exact matched with control prescriptions. Cohort flowcharts for both cohorts are shown in Supplementary Appendix Table 2; ePA prescriptions accounted for a relatively small proportion of medication orders overall throughout the study period (1.9%).

On average, in the temporal cohort, patients' mean age was 57.9 years (17.4 SD), 63.4% were White, and 58.1% were female. Patient- and prescription-level characteristics are shown in Table 1 for both cohorts, which were reasonably well-balanced for all measured characteristics. The frequency of medications in the matched cohorts are shown in Supplementary Appendix Table 3. The most common medications were hydrocodone/acetaminophen, topical diclofenac sodium, albuterol sulfate, sildenafil citrate, and ondansetron, which were similar for both cohorts.

In the temporal analysis, the overall rate of primary adherence within 30 days for ePA prescriptions was 64.2% compared with 68.8% for control prescriptions (adjusted Relative Risk [aRR]: 0.92, 95%CI: 0.91–0.93) (Table 2). Concurrent analyses revealed similar rates of primary adherence (64.7% of ePA vs 62.3% of non-ePA prescriptions), with an adjusted aRR of 1.03, 95%CI: 0.98–1.09. Slight differences between the temporal and concurrent analyses could be due to clinics or matches included in each type of analysis. The delay between prescribing and filling was also slightly higher for ePA vs control prescriptions in both cohorts; an average delay of 4.2 days for ePA vs 3.0 for control in the temporal cohort (adjusted log difference in days: +0.30, 95%CI: +0.27, +0.34).

Rates of primary adherence between ePA and control prescriptions differed somewhat across the most commonly prescribed therapeutic classes (Figures 2 and 3). For the temporal cohort (Figure 2), differences in adherence between ePA and control were slightly larger for dermatological/topical or lifestyle medications (eg, sildenafil and tadalafil) and lowest for analgesic, asthmatic, and antiemetic medications. Similarly, for the concurrent cohort (Figure 3), rates of primary adherence were higher for ePA orders vs control for all classes except diabetes and asthmatic medications. The lowest primary adherence rates for ePA orders were for Zoster vaccine (14.9%), mometasone furoate (26.4%), and topical acyclovir (29.6%), which were all noticeably lower than for control (Supplementary Appendix Table 4), with the greatest gaps vs control for topical acyclovir, mometasone furoate, olopatadine, glucose supplies, and budesonide.

In Supplementary Appendix Table 5, we show the results stratified by demographic subgroups by age, race/ethnicity, and payer type. For both cohorts, there were no notable differences from the main results, though patients ≥65 years of age tended to have better relative rates of filling through ePA, and Asian patients had slightly lower medication filling rates through ePA. The subgroups were somewhat small, however, and were exploratory.

Other sensitivity analyses did not reveal substantial differences in results by changing the definition of primary adherence outcome, exact matching within patient, excluding any duplicate patients, or adjusting for patient demographic characteristics (Supplementary Appendix Table 6). Across the 8 sites in the temporal analysis, slight differences in primary adherence rates for ePA and control prescriptions by site suggest some slight differences, potentially due to differences in implementation and clinician utilization (Supplementary Appendix Figure 1).

DISCUSSION

In this large integrated delivery network, in the first year after adoption, electronic prior authorization did not improve rates of medication filling, or primary medication adherence, compared with

Table 2. Primary adherence to medication for electronic prior authorization compared with control prescriptions

	Primary Adherence		Relative Risk (95% CI)	
Ref: Control	Electronic prior authorization, n (%)	Control, n (%)	Unadjusted[a]	Adjusted[b]
Temporal (prepost) cohort	24 930 (64.2)	26 731 (68.8)	0.92 (0.91–0.93)**	0.92 (0.91–0.93)**
Concurrent cohort	1310 (64.7)	1262 (62.3)	1.02 (0.97–1.07)	1.03 (0.98–1.09)
	Days until filling		**Log difference in days (95% CI)**	
Ref: Control	Electronic prior authorization mean (SD)	Control, mean (SD)	Unadjusted[a]	Adjusted[b]
Temporal (prepost) cohort	4.2 (6.7)	3.0 (6.3)	+0.31 (+0.27, +0.34)**	+0.30 (+0.27, +0.34)**
Concurrent cohort	3.9 (6.5)	3.2 (6.6)	+0.18 (+0.03, +0.33)**	+0.13 (−0.03, +0.29)**

Abbreviations: CI, Confidence Interval.

[a]Adjusted for multiple patient fills.

[b]Adjusted for multiple patient fills, patient age, sex, race, ethnicity, provider specialty.

**$P < .05$.

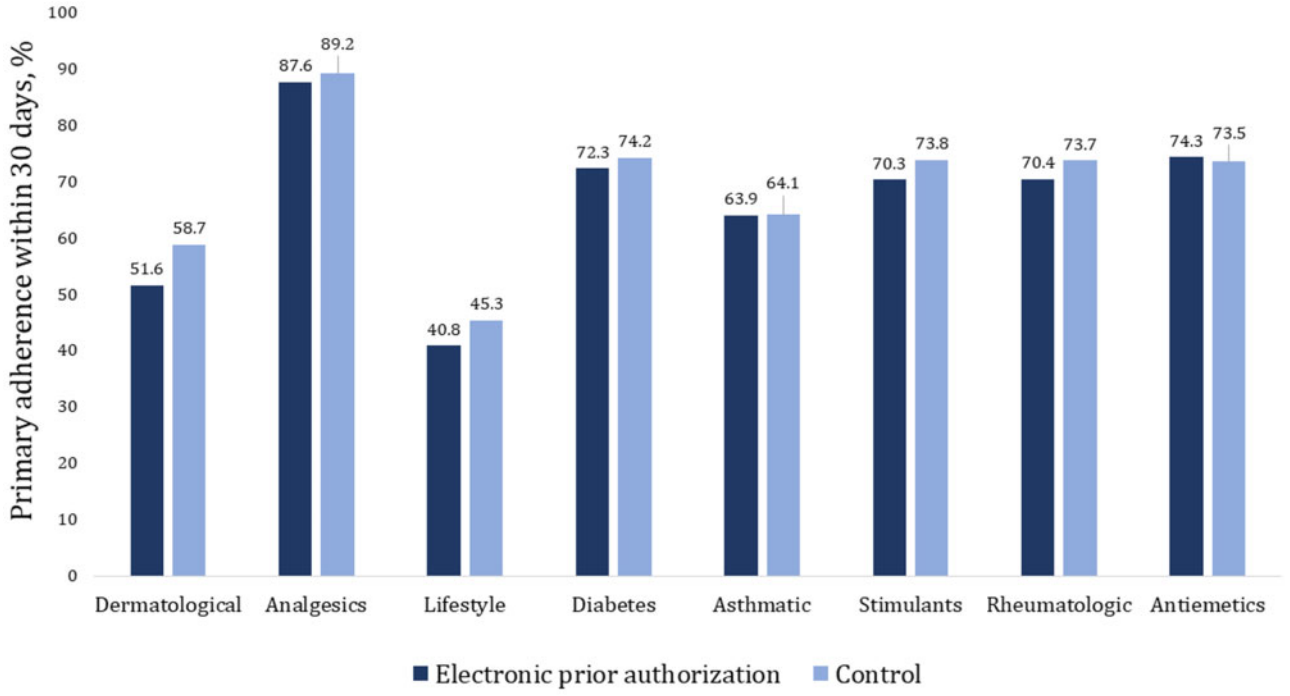

Figure 2. Primary adherence by therapeutic drug class in temporal cohort.

the control and perhaps may have led to worse adherence. Of note, there were no substantial differences for commonly-used chronic medications. However, there were larger gaps for dermatological agents and lifestyle medication for ePA compared with control prescriptions. Our results also suggested that ePA could have misfired in some cases for vaccines and diabetes testing supplies, suggesting possible problems in implementation.

One-quarter of newly-prescribed medications go unfilled.[9,10] Prior authorization requirements have been shown to further exacerbate nonadherence, resulting in patients abandoning prescriptions almost 40% of the time.[23–25] One key reason for this inefficiency is that prior authorization requirements are not apparent to prescribing clinicians when they are choosing a medication and are not typically identified until prescriptions are submitted to the patient's insurance by pharmacies. The burden on clinical practice of prior authorizations is also substantial; physicians complete an average of 31 prior authorizations per week requiring an average of 15 hours, and one-third of practices employ staff whose full-time job is to process prior authorizations.[14,26] While ePA technology, embedded in the EHR, has the potential to alleviate some administrative burden, its adoption has yet to be rigorously evaluated. Limited prior evidence on ePA implementation has suggested some efficiency in workflow and fewer prior authorizations that ultimately are denied, yet did not evaluate effects on medication adherence.[16,27] Notably, the ePA adoption in those studies differed from the approach evaluated here in that they implemented ePA processes centrally and

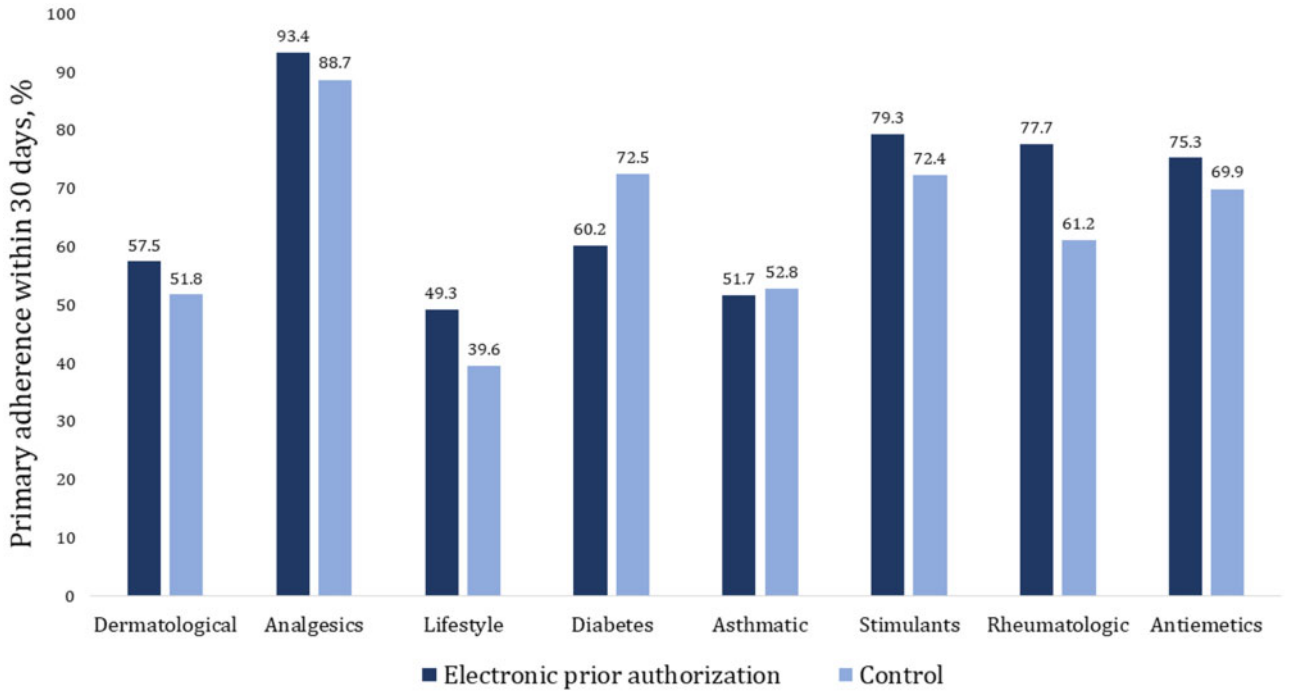

Figure 3. Primary adherence by therapeutic drug class in concurrent cohort.

evaluated data only from integrated pharmacies or academic health-systems.

While ePA offers several hypothetical benefits to practices and patients, we did not observe any differences in primary medication adherence. There are several possible reasons for observations of no difference and perhaps worsened adherence. First, ePA fired for a relatively small proportion of prescriptions (<2%), which is less than typical nationwide, which suggests some potential misfiring.[13,14] Similarly, ePA may have misfired for medications that did not actually require prior authorization, such as some low-cost topical medications, vaccinations, and glucose supplies. Second, providers may have been using both ePA and traditional prior authorization processes simultaneously, in part because not all insurances have ePA capability, which could increase cognitive load and result in a delay if providers are unaware that ePA was not possible for a given prescription. In fact, an estimated 75% of providers using ePA employ multiple prior authorization solutions.[28]

Erroneous firing or changing prior authorization requirements could also have inadvertently led providers to think that the intervention is not working, or worse, was actually increasing inefficiency. Third, while the ePA system was integrated into the workflow, additional challenges could be that it initially required providers to learn how to use it and that the denial in-basket messages may not have been read immediately; however, these barriers could attenuate over time with increased awareness. Fourth, while ePA can potentially improve efficiency of processing, several barriers to prior authorizations still persist, including out-of-pocket costs to patients, arbitrariness and variations across insurer plan formularies that often change, and fragmentation in care and communication between providers and pharmacies.[3,4] Unfortunately, ePA technology is not designed to solve these barriers to care, so addressing efficiency may have been insufficient to observe an effect of ePA on adherence, particularly given the complexity of the US healthcare system.

Despite the limited evidence, there is, however, much enthusiasm for adoption of ePA technology in clinical practice.[6,12,15] Given the strong suspicion that challenges with ePA implementation could have at least partially led to the null findings, ePA could be improved in several ways. First, ePA could be enhanced to suggest medication alternatives rather than just rejecting the medication. Related behavioral sciences research suggests that defaulting to alternatives or providing active choice alternatives improves provider prescribing in other contexts.[29–32] Second, ePA could be enhanced by reducing fragmentation between payer and ePA, especially because payer information may not have been up-to-date; improving fragmentation could reduce the potential misfiring of medications that may, in particular, be expensive to some insurers but not to others. This may be increasingly possible as integrated delivery networks and risk-bearing contracts with insurers grow, due to focus on the use of technology to improve care coordination.[33,34] Third, centralization of prior authorization and integration of data and processing with pharmacies may offer further efficiencies.

These findings offer several broader lessons for health information technology interventions, particularly the importance of testing whether the interventions that are supposed to improve care actually do. Health information technology represents just one type of tool, and, in this case, computerizing the prior authorization process may not have actually addressed the barriers to efficiency, especially when not all payers participate in the technology. This research emphasizes the need for rigorous study of these types of interventions not only to inform effectiveness within healthcare systems but evaluate any issues with implementation. At the same time, this work also highlights the need to also be mindful of the role of payers while evaluating health technology interventions, because implementation issues may not have been as evident without evaluating impacts in multiple insurances. Future research should further explore whether processes of implementation could have affected these findings and identify other ways to improve efficiency.

There are several study limitations. First, while we used 2 different quasi-experimental study design approaches, this was not a randomized study. Second, provider identifiers were not available, so we were limited in our ability to measure provider-level characteristics. Due to the fact that in current systems it is impossible to know whether traditional prior authorization is required until the pharmacy submits the prescription to the insurer, and that this information is not retrospectively saved in Sutter Health or Surescripts data, we were also unable to directly identify traditional prior authorization prescriptions. However, this study identified comparable prescriptions from real-world practice either for patients with the same exact health insurance benefit plan (concurrent analysis) or prior time periods for the same patient when they had the plan (before/after analysis) and, therefore, is perhaps a fairer comparison and allowed us to evaluate impact of implementation. Finally, mail order medications were not included in the data, but this was unlikely to be differential by study group.

CONCLUSION

Despite increasing interest in implementing electronic prior authorization to improve prescription filling rates, health-system adoption did not change adherence to medication and may have had a potential deleterious effect during its initial implementation. System misclassification of medications that require prior authorization leading to inaccurate electronically generated requests, not all payers participating in ePA, and other implementation challenges could have led to the null findings. Other health technology and informatics interventions deployed in outpatient care may face similar challenges.

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AUTHOR CONTRIBUTIONS

JCL and MAF drafted the manuscript. MAF obtained funding and supervised. JCL, MH, and AT analyzed the data. SM collected and preprocessed the data. JCL, CDS, XY, LMDG, and MAF conceived and designed the study. All authors contributed to interpreting results and critically revised the manuscript for intellectual content and approved the final manuscript.

SUPPLEMENTARY MATERIAL

Supplementary material is available at *Journal of the American Medical Informatics Association* online.

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DATA AVAILABILITY

The data underlying this article cannot be shared publicly due to the confidential nature of the data and importance of protecting patient privacy. Data will be shareable upon completion of appropriate data use agreements and permission from Sutter Health and Surescripts.

CONFLICT OF INTEREST STATEMENT

None declared.

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