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Utilization Patterns of RxChange Messages for Pharmacist & Prescriber Communications Regarding ePrescriptions

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Industry Alignment:

NCPDP:
WG11 | ePrescribing & Related Transactions
- RxChange Task Group
SCRIPT Standard

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Abstract

RxChange messages are included in the SCRIPT Standard to facilitate bi-directional communication between the pharmacist and the prescriber after a NewRx has been received and pharmacist recommendations arise. Researchers found the RxChange message to be utilized by pharmacists and prescribers with an overall approval rate of 52% indicating pharmacists provide meaningful prescription recommendations. The relatively high rate of denials (47%) may indicate further efforts to include pharmacists in the patient's care team are needed to increase the role and value of the pharmacist.

Utilization patterns showed therapeutic interchange as the predominant use case at 76%. Prescription clarification had the highest approval rate at 64%. Two available use cases within RxChange showed no use indicating a possible need for modification. Four drug classes appeared frequently in RxChangeRequest transactions: selective beta-2 adrenoreceptor agonists, extended-spectrum penicillins, SSRIs, and glucagon-like peptide 1 analogues. The duration between NewRx:RxChangeRequest and RxChangeRequest:RxChangeResponse showed a statistically significant difference with the latter having a shorter duration.

Background

The NCPDP SCRIPT Standard was developed to electronically transmit prescription information throughout the healthcare ecosystem to improve critical communication (NCPDP Standards, n.d.). Research has shown that electronic prescribing significantly reduces medication errors and patient harm in hospital settings, yet there were remaining gaps in electronic communication (Roumeliotis et al., 2019). The NCPDP SCRIPT Standard provided additional improvement in electronic prescribing through bi-directional electronic communication between the pharmacist and prescriber using the RxChangeRequest and RxChangeResponse messages within the standard (Gong, Zheng & Lester, 2024).

These messages provided pharmacists with an electronic communication tool to provide their recommendations to the prescriber (RxChangeRequest) and receive a response back from the prescriber (RxChangeResponse), all within the SCRIPT Standard. In 2023, Surescripts reported over 34 million RxChange transactions (Surescripts, 2023). These transactions provide data on how pharmacist intervention recommendations are being implemented.

Research Objective & Design

Determine utilization patterns of RxChange by pharmacists and prescribers, and its impact on prescription content, cost savings, and safety.

Researchers analyzed ePrescription and SCRIPT Standard messages from electronic health records utilizing Surescripts data from 2022 and 2023. NewRx and associated RxChangeRequest and RxChangeResponse messages were included in the analysis. RxChangeReqest and RxChangeResponse messages were merged and the flow of information maintained through a message identifier. Analysis was approached through descriptive statistics and non-parametric tests.

Research Findings

RxChange Volume. A total of 1,361,528 NewRx:RxChangeResponse message pairs were analyzed for messages which were approved, or approved with changes, by the prescriber resulting in a total of 721,415 prescriptions, or 52% of the total volume of RxChangeRequest messages. Further linking of the prescriptions to detailed medical

information resulted in 210,995 prescriptions, or 31% of the total volume, due to pharmacist-initiated interventions via the RxChange message.

Use Cases. Seven options for use cases are available within the SCRIPT Standard: therapeutic interchange (T), generic and interchangeable substitution(G&I), prior authorization (P), drug use evaluation (D), script clarification (S), out of stock (OS), and prescriber authorization (U). Researchers evaluated 5 of these finding therapeutic interchange returned the highest rate of use at 1,036,600 (76%), followed by script clarification and out of stock at 10% and 9%, respectively (see **Figure 1**). Of all NewRx messages with an RxChangeResponse, 52% were approved, or approved with changes, by the prescriber. The use case with the highest rate of approval was script clarification at 64%, and the highest rate of denial was the prior authorization use case at 73% (see **Figure 2**).

Denial Reasons. Prescriber denials were largely (41%) attributed to the request being received and responded to using another form of communication such as phone or fax. However, 21% of denials were cited as an inappropriate proposed change by the pharmacist. A request to have the patient follow up with the provider directly accounted for 18% of all denials.

Response Duration. The majority of RxChangeRequest messages (74%) were resolved within days. Same-day resolutions occurred in 347,340, or 25%, of all RxChangeRequest messages. The time frame between the NewRx and the RxChangeRequest had the largest duration at a median of 1.57 days while the duration between the RxChangeRequest and RxChangeResponse was a median of .27 days. Statistical analysis found this to be a statistically significant difference ($p<0.05$).

Therapeutic Interchange. Of all NewRx with RxChange messages, 25,157 had unique NDC's with 75% of those associated with ATC level 4 medications. In the G&I substitution use case, selective beta-2 adrenoreceptor agonists were the highest at 13% followed by corticosteroids. Extended-spectrum penicillins returned the highest OS rates at 8%. P and S use cases were most prevalent for Glucagon-like peptide-1 analogues at 9% and 6%, respectively.

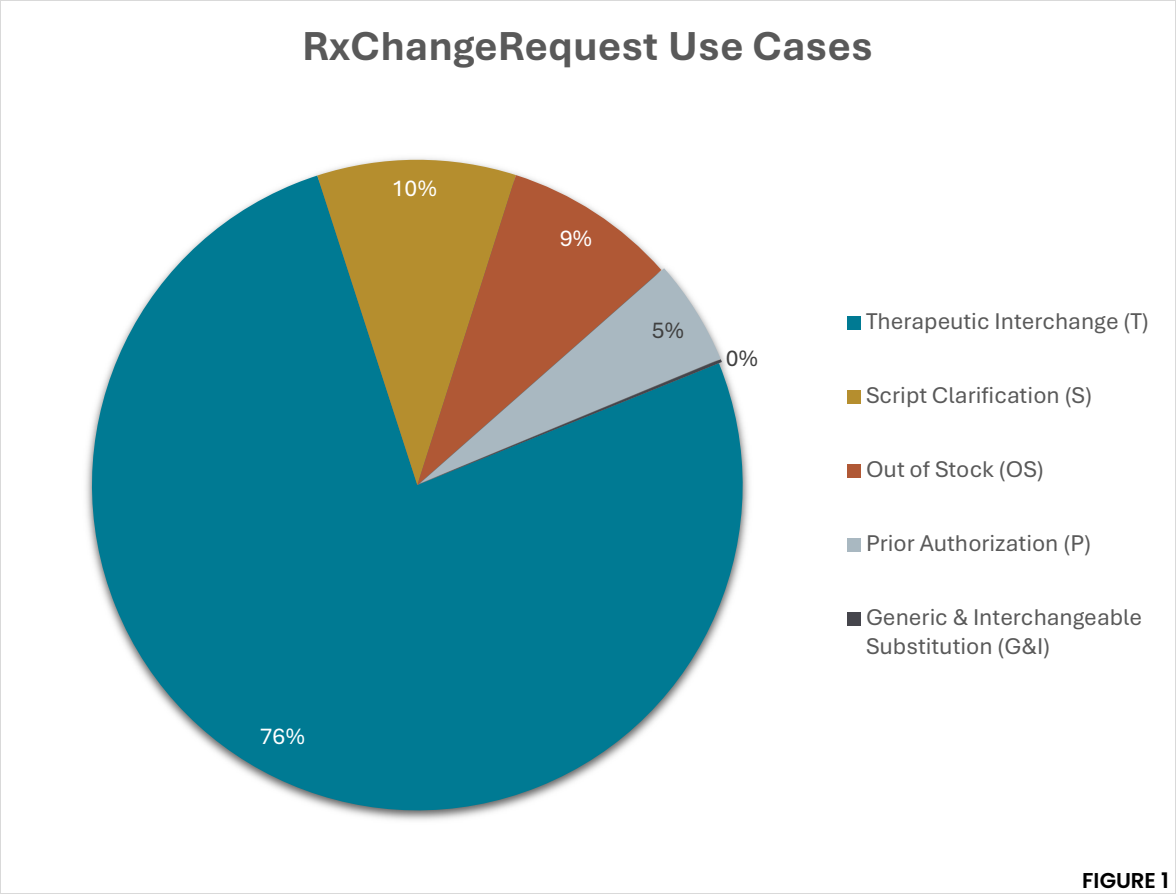
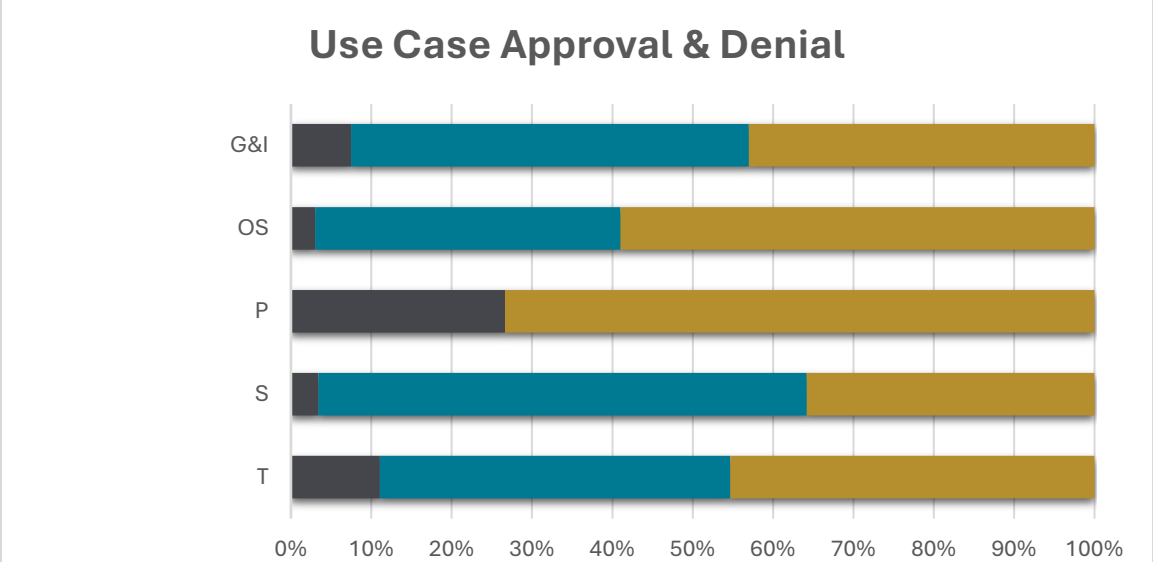


FIGURE 1



	T	S	P	OS	G&I
Approved	11.08	3.41	26.62	3.03	7.48
Approved w/ Changes	43.61	60.8	0	37.98	49.48
Denied	45.31	35.79	73.38	58.99	43.03

FIGURE 2

Recommendations to Move Forward

Study results show the value in RxChange messages to improve patient outcomes and speed time to therapy for patients. The 64% approval rate in the script clarification use case indicates RxChange messages are appropriately functioning to improve coordination of care. Two areas are noted for further research to determine if updated implementation guidance or changes to the existing standard are needed to increase adoption: Prescriber Authorization and Drug Use Evaluation. Alternatively, these use cases may need to be retired. Similarly, additional denial codes may be needed to accurately cover all prescriber denial reasons.

The low direct approval rate of pharmacist recommendations (10%) indicates additional guidance for implementation and use of best practices in the NCPDP SCRIPT, and other meaningful standards, is needed. An additional consideration to improve direct approval of pharmacist recommendations is increased education, collaboration, and inclusion of the pharmacist as part of the patient's healthcare team. This equates to pharmacist inclusion in the EHR and access to patient's clinical data to improve the pharmacist's ability to make meaningful, informed recommendations utilizing the RxChange message.

A lack of comfortability with electronic transactions for prescription modifications could be a barrier to utilization of RxChange through to approval. This is indicated by the high rate of denial (41%) with reasoning of "responded to using another form of communication such as phone or fax". Additional education surrounding the functionality, safety, and benefits of communication through the SCRIPT Standard could reduce the denial rate of RxChangeRequest messages.

NCPDP Integration

WG11 ePrescribing & Related Transactions

- **RxChange Task Group**
  This task group will optimize RxChange workflows and recommendations, including guidance for new use cases, clarifications and best practices for RxChange.

Disclosures

Research was performed by the Grantee, the University of Michigan College of Pharmacy, was funded by the NCPDP Foundation, and final results were provided to the NCPDP Foundation by the Grantee.

The University of Michigan College of Pharmacy indicated AI technology was utilized in the drafting and writing of the report. This abridged results paper did not utilize AI technologies.

As of the publication of this abridged report, and to the best knowledge of the NCPDP Foundation, the original report(s) generated by the University of Michigan College of Pharmacy are published in JAPhA volume 64, Issue 6 as indicated in the references.

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