

BACKGROUND

- Specialty medications are high-cost drugs, produced utilizing the latest in biotechnology, and require optimized supply chains. These medications are primarily used for complex disease states such as, Inflammatory Diseases, Multiple Sclerosis, and Oncology.¹
- Between 2016 and 2021 the percentage of specialty medication spending increased by 43%, according to the Department of Health and Human Services. In the same period retail pharmacies saw a net 18% decrease in the specialty share of retail prescriptions.²
- Prescribing errors with specialty medications lead to patient safety risks, financial waste, and ineffective treatment outcomes. Pharmacists are excellent resources for disease-specific dosing, drug interaction screening, and ensuring therapeutic appropriateness. Specialty medications for inflammatory diseases such as Atopic Dermatitis, Psoriasis, Rheumatoid Arthritis, Ulcerative Colitis, and Crohn's Disease are complex as they require high-touch patient monitoring and specific dosing.^{3,4}
- To prevent prescribing errors, pharmacists verify prescription instructions, dosage forms, quantities, and appropriateness of therapy utilizing manufacturer literature, institutional protocols, and drug information databases. Discrepancies and recommendations are then traditionally communicated to prescriber offices telephonically.⁵⁻⁶
- Limited studies have explored the prescription clarification process of specialty medications. Lumicera Health Services, a specialty pharmacy which supports a Health System Specialty Pharmacy (HSSP), provides pharmacists the capability to clarify prescriptions using the Electronic Health Record (EHR).

PURPOSE

To evaluate the effectiveness of the prescription clarification process for HSSP prescriptions by examining the percentage of prescriptions clarifications that are ultimately accepted by providers.

METHODS

STUDY DESIGN

- Internal data analytics were utilized to gather HSSP prescriptions which needed clarification from January 1st 2023 to July 31st 2023.
- Prescriptions flagged as needing clarification were analyzed according to the inclusion criteria.
- Prescription clarifications were categorized into Clinical or Non-Clinical intervention types.
- Intervention types were further classified as Clinical (directions for use, adverse drug event, etc.) or Non-Clinical (insurance, etc.).
- Prescriber acceptance rates, time of prescription clarification, and change in cost post clarification were evaluated.

STUDY POPULATION

- Inclusion Criteria**
 - Patients 18 years of age and older
 - HSSP Patient
 - Health System Network Provider
 - Prescriptions requiring clarifications
 - Prescriptions related to Atopic Dermatitis, Psoriasis, Hidradenitis, Urticaria, Psoriatic Arthritis, Rheumatoid Arthritis, Crohn's Disease, Ulcerative Colitis, Eosinophilic esophagitis (EoE), and Asthma as dictated per International Classification of Diseases, Tenth Revision (ICD-10) code
- Exclusion Criteria**
 - Prescriptions determined to be incorrectly flagged as needing clarification

OUTCOMES

- Primary Outcome**
 - Percentage of prescription clarifications accepted by prescribers:
 - Determined by the number of prescriptions dispensed with a change medication, medication strength, quantity, directions for use, or an additional prescription.
- Secondary Outcomes**
 - Average time to prescription clarification:
 - Average time to prescription clarification utilizing EHR follow-up.
 - Average time to prescription clarification utilizing telephonic communication
 - Average number of contacts utilizing EHR or telephonic communication
 - Change in cost post prescription clarification:
 - Average Wholesale Price (AWP) Cost Difference = (AWP before clarification – AWP post clarification)
 - Gross Margin = (AWP Cost Difference Resulting in Cost Decrease – AWP Cost Difference Resulting in Cost Increase)
 - Pharmacist Labor Costs Overall Studied Time Frame = Summation of individual pharmacist labor costs associated with each prescription needing clarification
 - Pharmacist Labor Costs = Estimated Pharmacist Salary per minute * Estimated time (minutes) need to complete clarification intervention + Number of times of contact per 2-day period.
 - Net Savings = (AWP Cost Difference Resulting in Cost Decrease – AWP Cost Difference Resulting in Cost Increase) – Pharmacist Labor Costs Overall Studied Time Frame

RESULTS

TABLE 1 & FIGURE 1: HSSP PRESCRIPTIONS NEEDING CLARIFICATION BY DISEASE STATES

Disease States	Prescriptions (n=118)
Inflammatory Diseases	56
Oncology/Hematology	43
Hepatitis	12
Growth Hormone	5
MS	1
Osteoporosis	1

FIGURE 2: NUMBER OF PRESCRIPTION CLARIFICATIONS PER INFLAMMATORY DISEASE

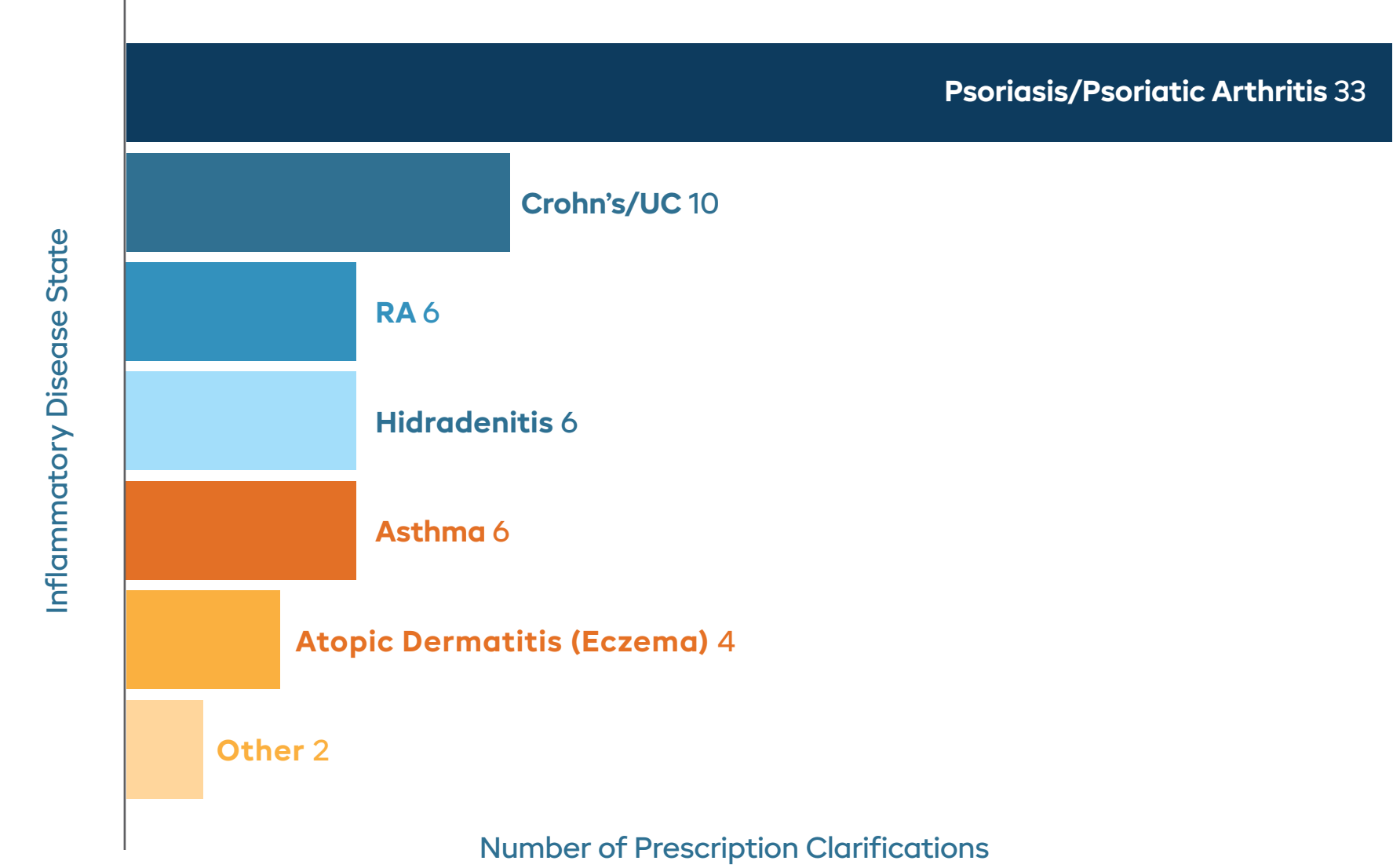


TABLE 2: CLARIFICATION CLASSIFICATION SUB TYPES

	Prescription Clarifications (n=67)	Prescription Clarifications (%)
Clinical	58	86.6%
Adverse Drug Event	1	1.5%
Directions for Use	22	32.8%
Loading Dose Needed	14	20.9%
Missing Dose	2	3.0%
Other	3	4.5%
Patient Information Needed	1	1.5%
Quantity	8	11.9%
Wrong Dosage Form	1	1.5%
Wrong Dose	3	4.5%
Wrong Medication	3	4.5%
Non-Clinical	9	13.4%
Insurance	2	3.0%
Other	7	10.4%

FIGURE 3: CLARIFICATION CLASSIFICATIONS

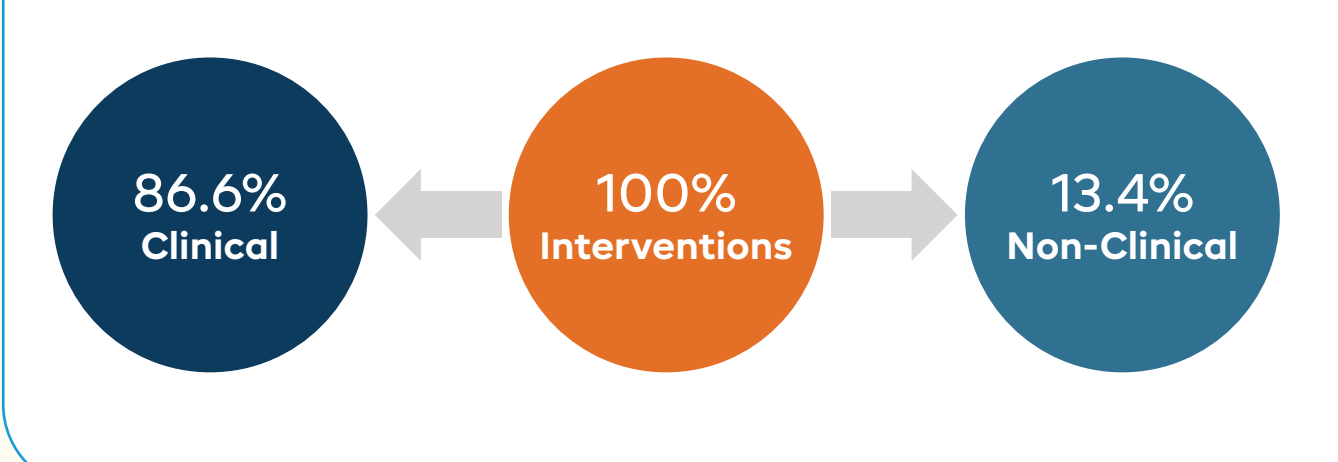


FIGURE 4: AVERAGE TIME TO PRESCRIPTION CLARIFICATION

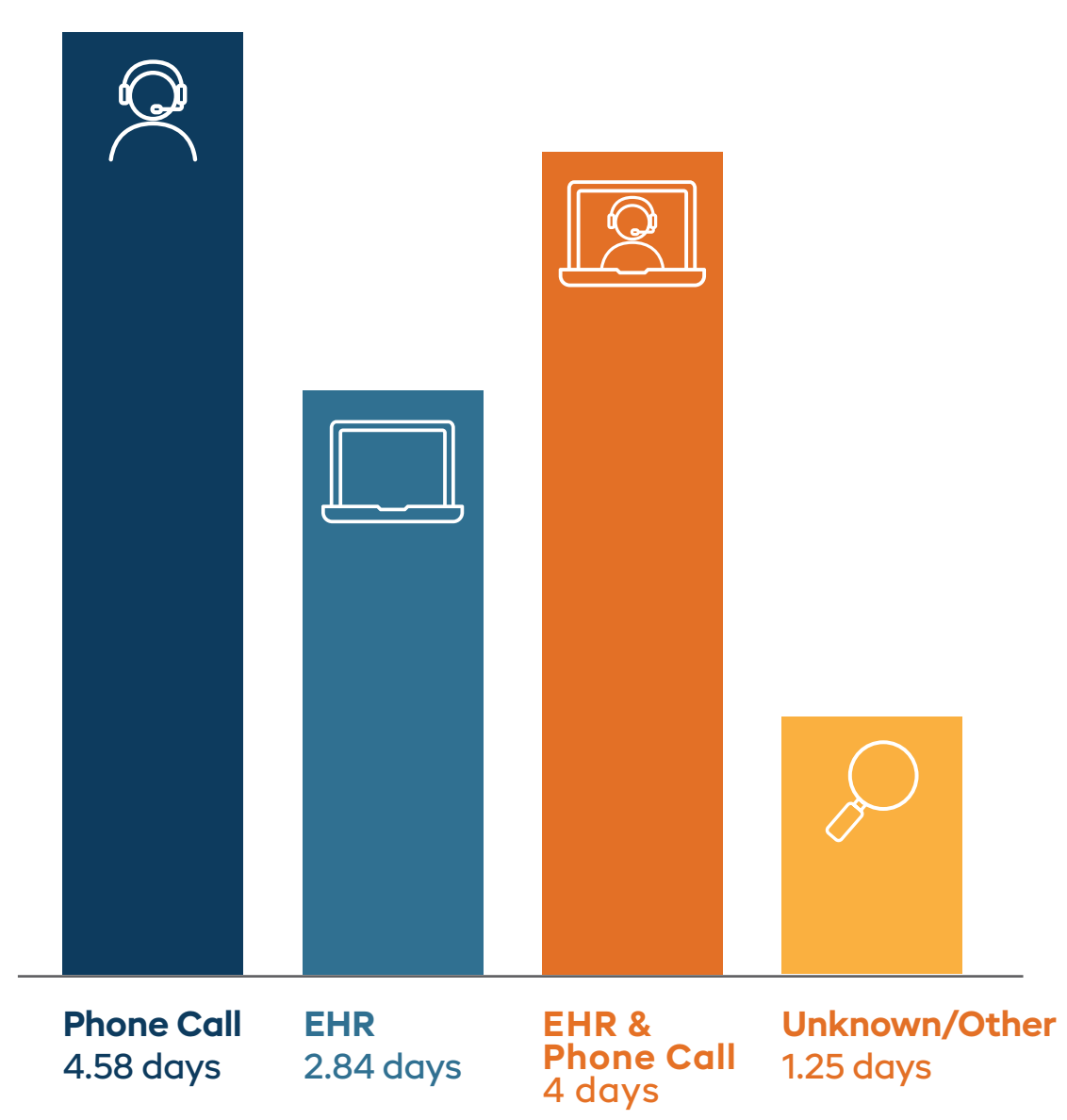


TABLE 3: PHARMACIST ACTIONS

Method of Clarification	Utilizations (n=67)	Average Time to Prescription Clarification (Days)	Average Number of Utilizations
Phone Call	31	4.58	1.16
EHR	31	2.84	0.84
EHR and Phone Call	1	4.00	1.00
Unknown/Other	4	1.25	0.00

FIGURE 7: INFLAMMATORY DISEASE STATES WITH THE LARGEST AVERAGE CHANGE IN AWP COST DIFFERENCE POST CLARIFICATION



TABLE 4 & FIGURE 5: PRESCRIPTION CLARIFICATION RESOLUTIONS

	Prescription Clarifications (n=67)	Prescription Clarifications (%)
Prescriptions Changed Post Clarification	39	58.1%
Prescriptions With Changes in Medication Dosage	7	10.4%
Prescriptions With Changes in Medication	1	1.5%
Prescriptions With Changes in Quantity Dispensed	11	16.4%
Prescriptions With Changes in Directions	13	19.4%
Additional Prescription Added	7	10.4%
Prescriptions Not Changed Post Clarification	28	41.8%
Clinical (Ex. Loading Dose Not Needed)	22	32.8%
Admin (Ex. Insurance)	6	9.0%

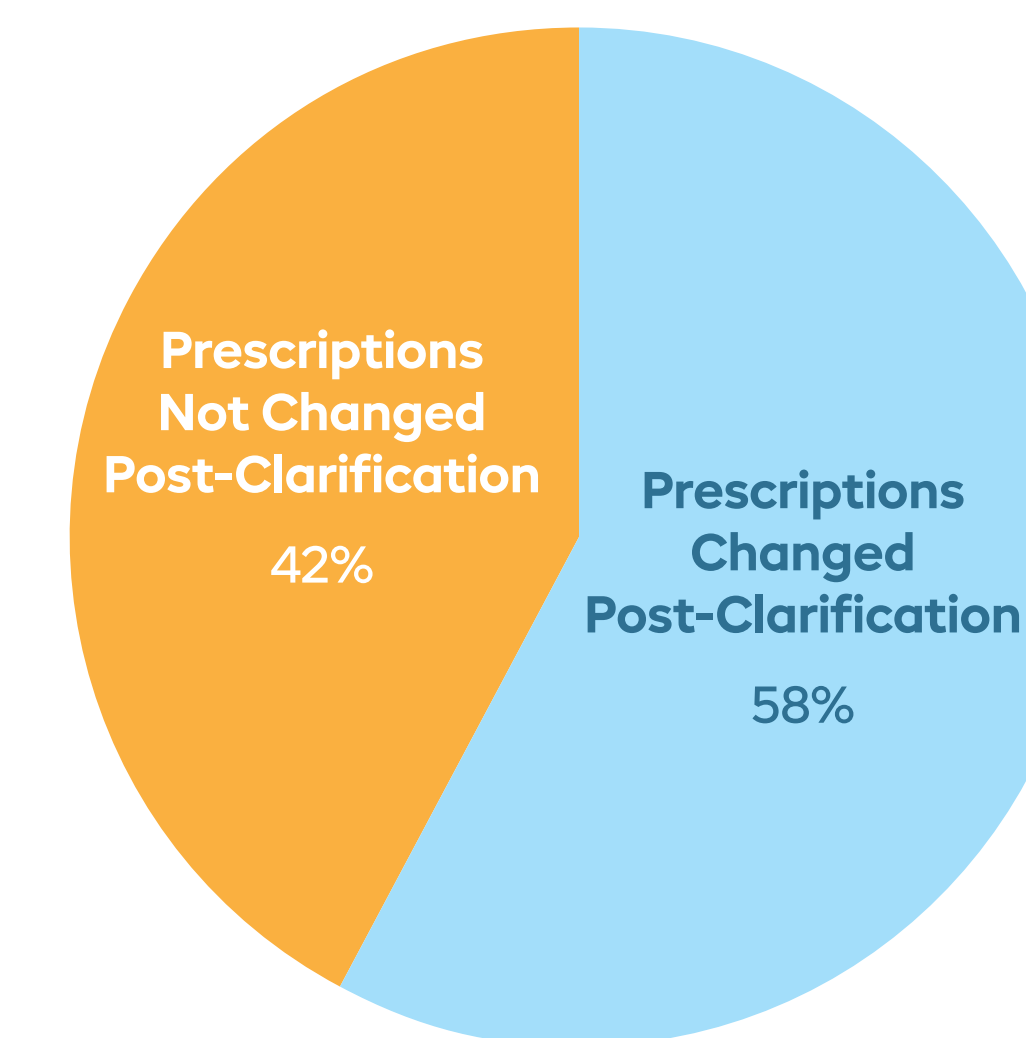


FIGURE 6: CHANGES IN AWP COST DIFFERENCE POST PRESCRIPTION CLARIFICATION

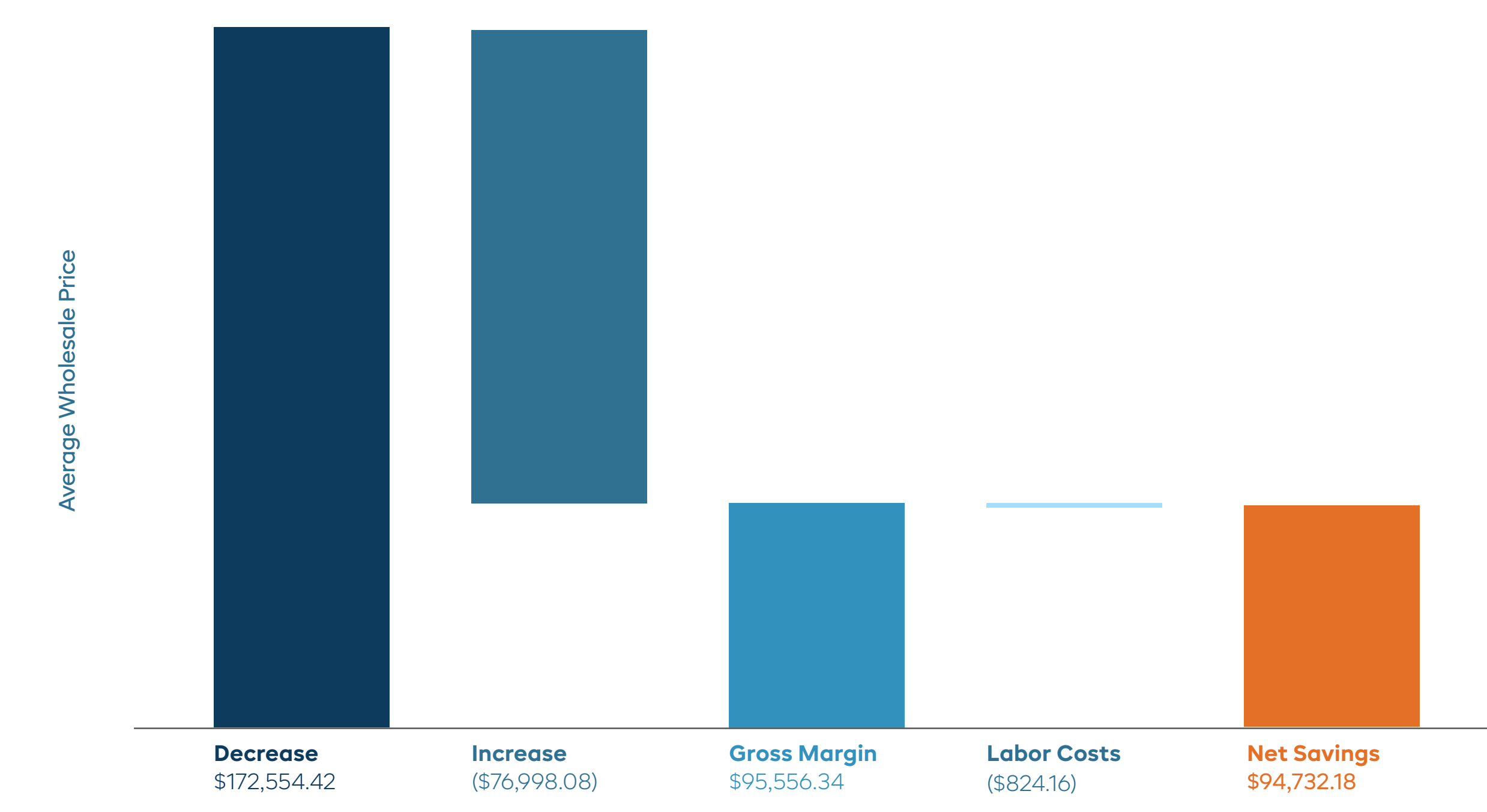


FIGURE 8: MEDICATIONS WITH THE LARGEST CHANGES IN AVERAGE AWP COST DIFFERENCE POST CLARIFICATION



DISCUSSION

- Between January 1, 2023, and July 31st, 2023, 118 HSSP prescriptions were flagged as needing clarification (Table 1, Figure 1).
- 67 prescription clarifications related to inflammatory disease conditions were made (Figure 2). 86.6% of clarification intervention types were clinical, with 13.4% deemed non-clinical (Figure 3, Table 2).
- Of the 86.6% of prescriptions needing clinical clarifications, questions about loading doses, directions for use, and quantity were the most common at 38%, 24%, and 14%, respectively.
- Non-Clinical clarifications had a lower average time to prescription clarification than Clinical Clarifications 3.78 versus 2.22 days. Phone and EHR utilization were the most common methods of clarification both utilized 46% of the time. The average time to prescription clarification was 3.6 days. Compared to phone use, EHR utilization had a shorter average time to prescription clarification 2.84 days versus 4.58 days (Table 3, Figure 4).
- 58% (39) of prescriptions were changed post pharmacist clarification while 42% (28) of prescriptions were not changed post pharmacist clarification. The most common prescription changes post pharmacist clarification were changes in directions and quantity, 19.4% and 16.4% respectively. Additional prescriptions for loading or missing doses comprised of 10.4% of the prescriptions changed post pharmacist clarification. Of the 42% of prescriptions that were not changed post-pharmacist clarification, 11.9% of the inquiries were whether a loading dose was required (Figure 5, Table 4).
- Throughout the examined timeframe, pharmacist clarifications on prescriptions resulted in Average Wholesale Price (AWP) cost difference increases and decreases of \$76,998.08 and \$172,554.42, respectively. Increases with AWP cost differences were associated with additional medication quantities being prescribed or additional prescriptions being sent accounting for loading doses (Figure 6).
- Psoriasis/Psoriatic Arthritis indications were associated with the greatest increase in AWP cost difference post prescription clarification \$58,131.67, primarily associated with changes in medication quantity for loading dose prescriptions. Hidradenitis was associated with the greatest decrease in AWP cost difference post prescription clarification \$99,686.64. This was due to the incorrect product being prescribed (Figure 7).
- Changes to Humira prescriptions were associated with the largest decrease in average AWP cost reduction post clarification \$99,686.64, respectively. Clarifications to Cosentyx prescriptions were associated with the largest increase in average AWP cost difference post clarification \$16,618.24, respectively (Figure 8).
- Factoring pharmacist labor costs associated with the clarification process; an estimated \$824.16 for the examined time frame. There was a generated AWP net savings of \$94,732.18 for the health system (Figure 6).

LIMITATIONS

- HSSP prescriptions are not captured if they needed clarification but were not flagged as such because the pharmacist utilized the EHR directly to gather the required information.
- Pharmacist procedures, practices, and costs associated with the prescription clarification workflow were idealized to provide an estimated labor cost associated for the process.

CONCLUSIONS

- Prescribers accepted pharmacist clarifications on prescriptions 58% of the time. HSSP Pharmacists with access to tools such as the EHR can shorten the time it takes for prescriptions to be clarified.
- A net AWP savings of \$94,732.18 was generated for the health system after accounting for pharmacist labor costs in the prescription clarification process. Changes in medication quantity had the largest impact on AWP, post prescription clarification.
- Overall, the prescription clarification process ensures that patients get the correct medication, dose, frequency, and quantity clinically appropriate for their respective disease state. With access to their respective disease state. The clarification process can be optimized to decrease the time to a patient receiving a medication and decrease costs to the health system.
- Future directives will be to streamline the prescription clarification process for HSSP patients utilizing specific features of the respective EHR.

DISCLOSURE

This research was conducted by Lumicera Health Services, Madison, WI without external funding.

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