I. Title of project:

Evaluation of Reporting Accuracy for the Do Not Use Abbreviations List at VA CMOP

Course title: PHPR 896B

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ABSTRACT

Specific Aims: The specific aims of this study are to determine whether the appropriate actions were taken, to quantify how often false positives are released for fill, and determine how much time was spent on false positives.

Methods: A retrospective descriptive review of data. Data was provided from the Structured Query Language (SQL) query report that identifies Do Not Use Abbreviations (DNU) from the Joint Commission for pharmacists to review across all seven CMOPs. The report provides data from January 1st, 2019 to June 30th, 2019 containing 5,763 prescriptions for pharmacist review.

Main Results: Of the 5763 prescriptions flagged for pharmacist review, 36% contained the DNU abbreviations QD and MS, 31% contained U and IU, and 32% contained trailing or leading zeros. It took on average 12.6 seconds to review each prescription for whether appropriate action was taken by the pharmacist. For each type of DNU abbreviation reviewed, the percent of false positives ranged from 38% to 93%.

Conclusions: Overall there was only a small percentage of the prescriptions reviewed that had inappropriate action taken by the pharmacist. However, pharmacists are spending extra time reviewing prescriptions that may not need review. Several patterns consistently showed up for review and adjusting the query to become more specific and efficient may reduce the extra time pharmacists are spending reviewing prescriptions and increase safe throughput.

INTRODUCTION

The Veteran's Administration Consolidated Mail Outpatient Pharmacy (VA CMOP) provides prescriptions for Veterans across the United States using seven highly automated facilities. Together, these facilities fill more than 107 million prescriptions annually. One of the focuses of the organization is to increase throughput safely to meet the increased demand for our mail order service. To ensure medication safety, a Structured Query Language (SQL) query report is used to identify Do Not Use (DNU) Abbreviations from the Joint Commission for pharmacists to review at the central database level before the prescription is allocated to an individual CMOP to fill. The query is run every hour and generates a report link for pharmacists to review via email if there are prescriptions to review. Pharmacists have to then follow the link and log in to access the report. When there are "false positives", pharmacists are required to review the prescription and use clinical judgement to decide whether to release the prescription (allow the prescription to be filled) or cancel the prescription. Given the volume of prescriptions filled at the CMOP locations, false positives if occurring at a high enough rate can lead to an inefficient use of pharmacist time and ultimately a misuse of resources. Theoretically if the query was desensitized to be more efficient, there would be fewer prescriptions to review and possibly less time spent reviewing the prescriptions. The purpose of this research is to determine whether the appropriate actions were taken, quantify how often false positives were released for fill, and foster recommendations to the SQL query report where appropriate to increase efficiency and optimize the pharmacists' time.

METHODS

Design: This study is a retrospective descriptive review of data.

Subjects:

Data was provided from the Structured Query Language (SQL) query report that identifies Do Not Use Abbreviations from the Joint Commission for pharmacists to review across all seven CMOPs. The report provides data from January 1st, 2019 to June 30th, 2019 containing 5,763 prescriptions for pharmacist review.

Measures:

In order to analyze the data provided, a data dictionary was used. After a prescription SIG was reviewed to determine the appropriateness of the pharmacist's action/query's action, findings were recorded using "Appropriate action by Pharmacist (Y=0, N=1)" and "Appropriate action by Query/misuse of time? (Y=0, N=1)". A brief description of the determination of each prescription was also provided.

Data Collection:

Data was obtained from Structured Query Language (SQL) query report that identifies Do Not Use Abbreviations from the Joint Commission for pharmacists to review across all seven CMOPs. Time spent identifying "false positives" was recorded to later be discussed as this relates to how much time pharmacists spent going through the SQL query report."

Data analysis:

The data provided was then analyzed remotely using excel to identify false positives and determine appropriateness of action by the query and pharmacist. Findings were recorded in the excel sheet to allow for recognizing the frequencies of reasons for being flagged by the query, as well as cancelled or released by the pharmacist. Because reviewing ~6,000 prescriptions is a time intensive task, the student group timed themselves reviewing 100 prescriptions to be able to correlate this to pharmacist time spent. The 100 prescriptions to be reviewed and timed by each student was based on the type of DNU abbreviation prescriptions each student reviewed (i.e. QD, U/IU, leading/trailing zero, MS). The prescriptions were reviewed chronologically based on their date.

RESULTS

Of the 5763 prescriptions flagged for pharmacist review, 32% contained trailing or leading zeros, 31% contained U and IU, 21% QD and 9% contained MS. It took on average 12.6 seconds to review each prescription for whether appropriate action was taken by the pharmacist.

For each type of DNU abbreviation reviewed, the percent of false positives ranged from 7.5% to 99.8%. The MS abbreviation had the highest false positive rate of 99.8% as most prescriptions (n=503) were appropriately released by the pharmacist. The second highest false positive rate was the leading zeros where 70% (n=495) were appropriately released, 179 (25.3%) were appropriately cancelled,. The third highest false positive rate of 54.5% was in regard to the use of IU/U (n=961),and 45% (n=813) that were cancelled appropriately. The QD abbreviation had the lowest false positive rate as the majority of prescriptions reviewed by pharmacists were only released 7.5% of the time while the majority were cancelled back to the site (n=579, 92%). Of the prescriptions that were appropriately released, scripts with U in “P/U” and “U/D” , “MEQ”, or included lab values or dates were released 100% of the time.

DISCUSSION

1. Based on the results, the highest false positives rate was MS at 99.8%. The most common reason for release was due to MS being used as the abbreviation for multiple sclerosis (n=439, 87.1%). Common reasons for release for IU/U were U/D, P/U (n=689,38.1%) in the script. False positives for trailing zeros included dates and lab values (n=410, 34.8%). The most common reason for release for leading zeros was due to punctuation or

grammatical errors (n=492, 70%). Finally the most common reason for release for QD was MEQ for milliequivalents (n=33, 2.9%).

2. Making an informational handout based on the findings would help provide education to each VA medical center on the importance of paying attention to prescription verbiage and DNU abbreviations. Attention to the findings can potentially reduce the amount of inappropriate scripts to the pharmacist's queue. Further suggestion would be to "desensitize" the query so that it does not flag the script when there is a space, back slash, or dash between Q's and D's. Also, it might be helpful to refine the MS query flag where it can define the difference between title abbreviation (Ms.) and multiple sclerosis versus morphine sulfate, as this has led to the most inappropriate time spent looking at scripts. Another item that needs refinement is identifying a trailing zero for a drug or device name and lab value. The date could also be an education point to VA medical centers to use a back slash or hyphen instead of a period. Another education point would be regarding punctuation and grammatical errors to reduce flags in the leading zero queue. Finally, refine the SQL query to identify the product numbers, insulin sigs and word abbreviations that lead to false positives.
3. A limitation to the study is that it does not account for cancellations or releases that may have been done outside of the particular variables that were analyzed. Another limitation is that 12.6 seconds only takes into account how long it takes to review the script. It does not include the time it takes to log into the que. Also, since the timed 100 prescriptions were reviewed by the students as they were reviewing their respective DNU abbreviation categories, there is the possibility that reviewing the prescriptions may have been faster since they were focusing on one type of abbreviation, which may not replicate the real environment of a pharmacist reviewing DNU abbreviation report.

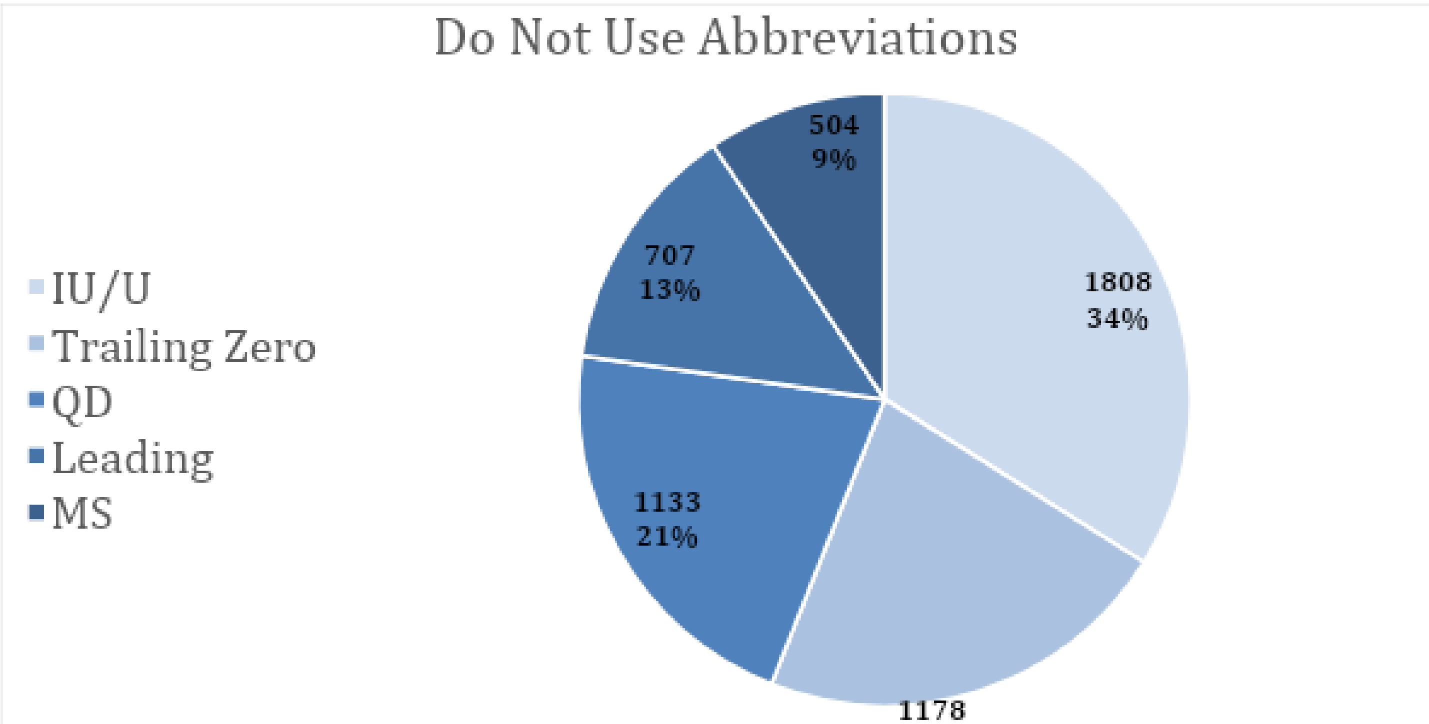
4. Inconsistencies varying from pharmacist to pharmacist were present. Some pharmacists did seem to focus only on the DNU abbreviation in the prescription sig and released the prescription to fill, while it seemed that others looked at the DNU abbreviation and the sig as a whole. In some cases, based on the DNU abbreviation alone, the prescription could have been released to fill but due to misspellings, typos, etc., it was cancelled. The prescription was deemed canceled inappropriately if canceled due to factors outside of the DNU abbreviation to maintain consistency.

CONCLUSIONS

1. Pharmacists are using extra time reviewing flagged prescriptions which could decrease the amount of prescriptions that are sent out in a timely manner.
2. Adjusting the query to becoming more specific may help reduce the time spent on reviewing the prescriptions and reduce the amount of logins
3. Providing broad, overall education to VA medical centers, may help reduce the number of flagged prescriptions as well.
4. Providing standardized education and training to VA CMOP pharmacists to further cut down on inappropriate actions during pharmacist review.

REFERENCEs

TABLES:

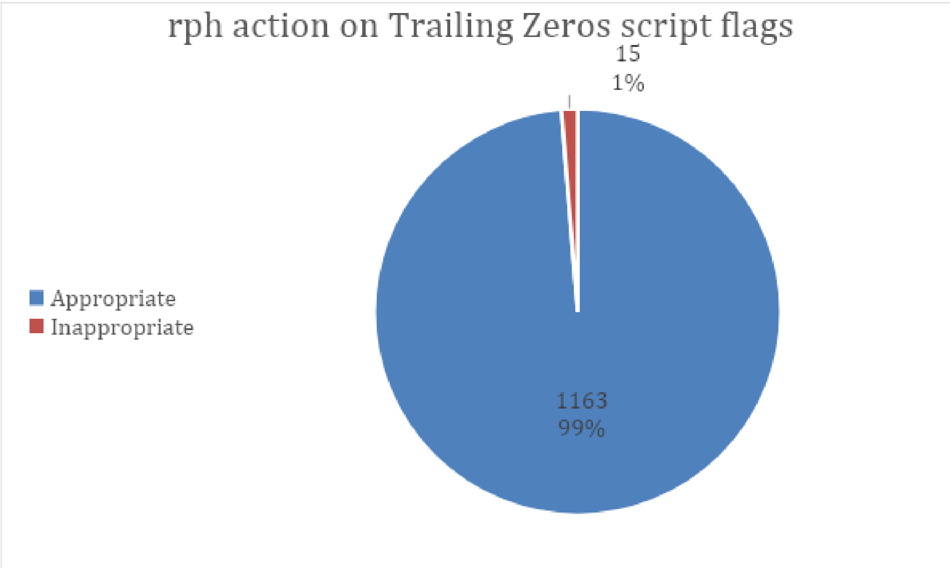


Trailing Zero:

2: Canceled (Manual) Total	Appropriate Count	Appropriate %	Inappropriate Count	Inappropriate %	Total	Total %
Other	299	25.38%	0	0.00%	299	25.38%
Date	1	0.08%	0	0.00%	1	0.08%
Device / Drug name	2	0.17%	0	0.00%	2	0.17%
Lab value	0	0.00%	1	0.08%	1	0.08%
Total	**302**	**25.64%**	**1**	**0.08%**	**303**	**25.72%**

3: Released Total	Appropriate Count	Appropriate %	Inappropriate Count	Inappropriate %	Total	Total %
Other	254	21.56%	14	1.19%	268	22.75%
Date	205	17.40%	0	0.00%	205	17.40%
Device / Drug name	197	16.72%	0	0.00%	197	16.72%
Lab value	205	17.40%	0	0.00%	205	17.40%
Total	**861**	**73.09%**	**14**	**1.19%**	**875**	**74.28%**

Pharmacist Action	Appropriate Count	Appropriate %	Inappropriate Count	Inappropriate %	Total	Total %
Grand Total	**1163**	**98.73%**	**15**	**1.27%**	**1178**	**100.00 %**



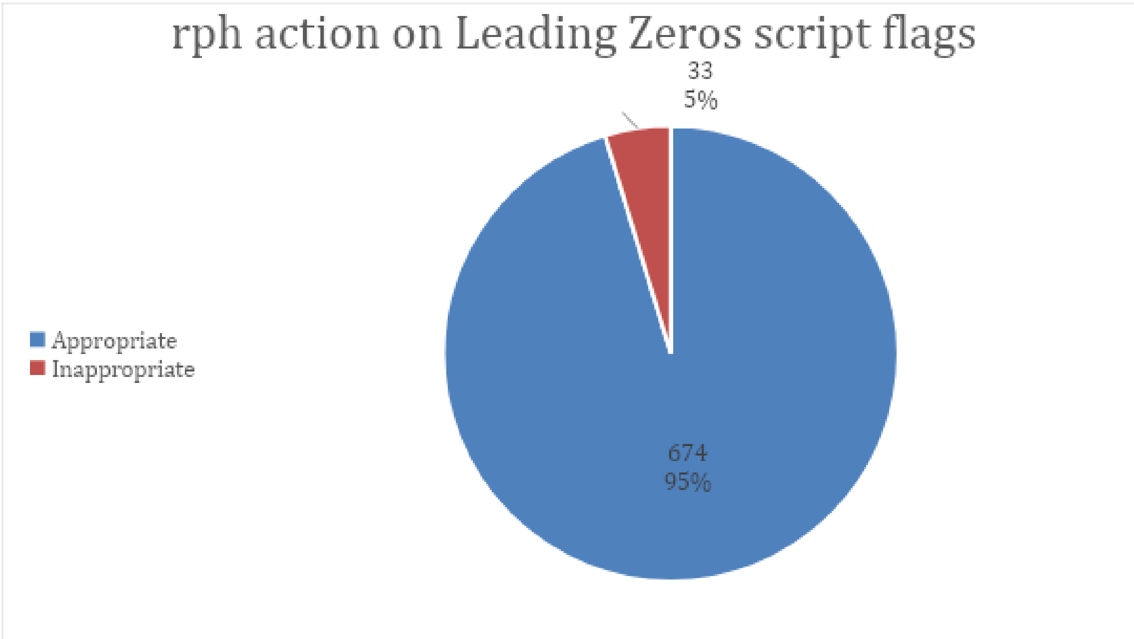
Leading Zero:

2: Canceled (Manual) Total	Appropriate Count	Appropriate %	Inappropriate Count	Inappropriate %	Total	Total %
Insulin sig	1	0.14%	0	0.00%	1	0.14%
Punctuation/Grammatical error	9	1.27%	1	0.14%	10	1.41%
Other	169	23.90%	0	0.00%	169	23.90%
Total	**179**	**25.32%**	**1**	**0.14%**	**180**	**25.46%**

3: Released Total	Appropriate Count	Appropriate %	Inappropriate Count	Inappropriate %	Total	Total %
Insulin sig		0.00%	24	3.39%	24	3.39%
Punctuation/Grammatical error	492	69.59%	3	0.42%	495	70.01%
Other	3	0.42%	5	0.71%	8	1.13%
Total	**495**	**70.01%**	**32**	**4.53%**	**527**	**74.54%**

Pharmacist Action	Appropriate Count	Appropriate %	Inappropriate Count	Inappropriate %	Total	Total %

Grand Total	**674**	**95.33%**	**33**	**4.67%**	**707**	**100.00 %**

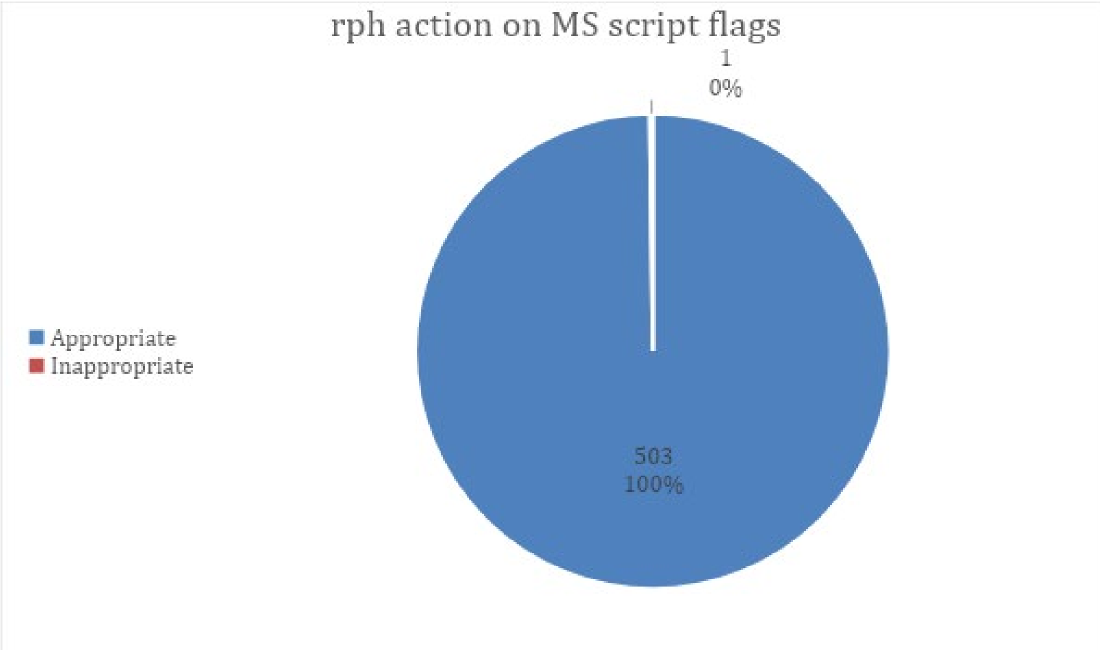


MS:

2: Canceled (Manual) Total	Appropriate Count	Appropriate %	Inappropriate Count	Inappropriate %	Total Count	Total %
Multiple sclerosis	0	0.00%	1	0.20%	1	0.20%
Total	**0**	**0.00%**	**1**	**0.20%**	**1**	**0.20%**

3: Released Total	Appropriate Count	Appropriate %	Inappropriate Count	Inappropriate %	Total Count	Total %
Ms - titles	46	9.13%	0	0.00%	46	9.13%
Multiple sclerosis	439	87.10%	0	0.00%	439	87.10%
Other	18	3.57%	0	0.00%	18	3.57%
3: Released Total	**503**	**99.80%**	**0**	**0.00%**	**503**	**99.80%**

Pharmacist Action	Appropriate Count	Appropriate %	Inappropriate Count	Inappropriate %	Total Count	Total %
Grand Total	**503**	**99.80%**	**1**	**0.20%**	**504**	**100.00 %**

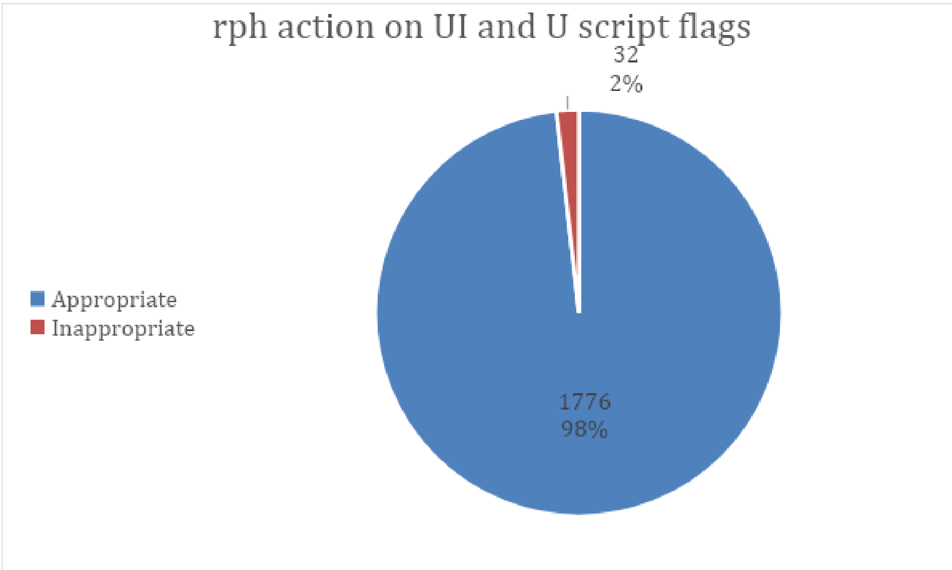


IU/U:

2: Canceled (Manual)	Appropriate Count	Appropriate %	Inappropriate Count	Inappropriate %	Total Count	Total %
IU used in SIG	323	17.87%	0	0.00%	323	17.87%
U in product #	0	0.00%	1	0.06%	1	0.06%
U used in SIG	487	26.94%	0	0.00%	487	26.94%
U as part of drug/ Insulin concentration	2	0.11%	5	0.28%	7	0.39%
Word abbreviation	0	0.00%	6	0.33%	6	0.33%
Other	1	0.06%	3	0.17%	4	0.22%
Total	**813**	**44.97%**	**15**	**0.83%**	**828**	**45.80%**

3: Released	Appropriate Count	Appropriate %	Inappropriate Count	Inappropriate %	Total Count	Total %
IU used in SIG	0	0.00%	4	0.22%	4	0.22%
U in product #	87	4.81%	0	0.00%	87	4.81%
U used in SIG	0	0.00%	13	0.72%	13	0.72%
U as part of drug/ Insulin concentration	126	6.97%	0	0.00%	126	6.97%
Word abbreviation	689	38.11%	0	0.00%	689	38.11%
Other	61	3.37%	0	0.00%	61	3.37%
Total	**963**	**53.26%**	**17**	**0.94%**	**980**	**54.20%**

Pharmacist Action	Appropriate Count	Appropriate %	Inappropriate Count	Inappropriate %	Total Count	Total %
Grand Total	**1776**	**98.23%**	**32**	**1.77%**	**1808**	**100.00 %**



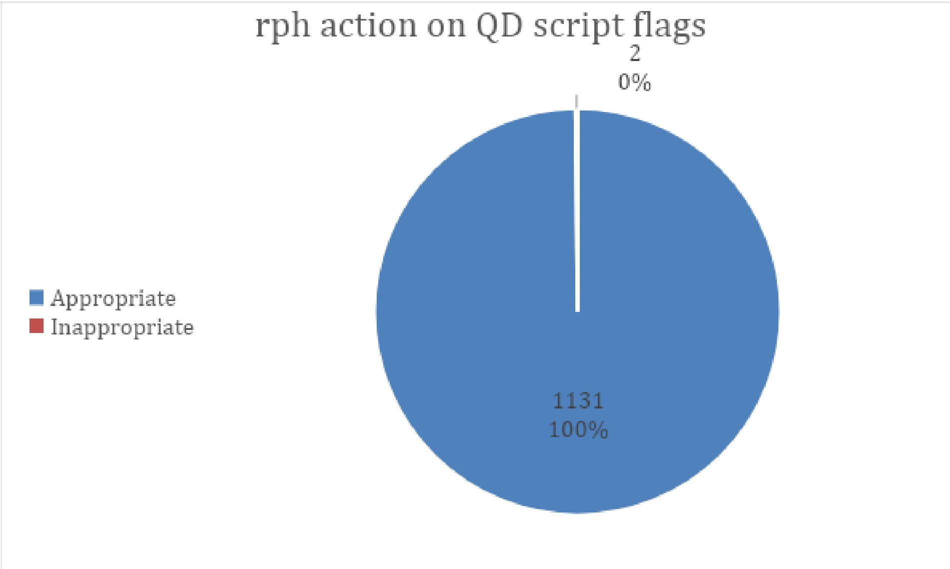
QD:

2: Canceled (Manual)	Appropriate Count	Appropriate %	Inappropriate Count	Inappropriate %	Total Count	Total %
Name of Doctor	1	0.09%	0	0.00%	1	0.09%
Other	77	6.80%	0	0.00%	77	6.80%
QD in Script	830	73.26%	2	0.18%	832	73.43%
QOD in Script	137	12.09%	0	0.00%	137	12.09%
Total	**1045**	**92.23%**	**2**	**0.18%**	**1047**	**92.41%**

3: Released	Appropriate Count	Appropriate %	Inappropriate Count	Inappropriate %	Total Count	Total %
MEQ (units for potassium)	33	2.91%	0	0.00%	33	2.91%
Name of Doctor	8	0.71%	0	0.00%	8	0.71%
Other	31	2.74%	0	0.00%	31	2.74%
QD in Script	3	0.26%	0	0.00%	3	0.26%
SUBQ	11	0.97%	0	0.00%	11	0.97%
Total	**86**	**7.59%**	**0**	**0.00%**	**86**	**7.59%**

Pharmacist Action	Appropriate Count	Appropriate %	Inappropriate Count	Inappropriate %	Total Count	Total %

Grand Total	**1131**	**99.82%**	**2**	**0.18%**	**1133**	**100.00 %**



APPENDICES

Data Collection Form:

A	B	C	D	E	F	G	H
nCMOP	AbbrevType (QD, MS, IU/U, leading/trailing zero)	ReviewAction (cancelled or released)	SigText	DateFlagged	Appropriate action by Pharmacist (Y=0, N=1)	Appropriate action by Query/"False Positive" (Y=0, N=1)	Description