Peer Review File

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Reviewer 1

Comments:

This manuscript addresses the important patient safety topic of Medication Reconciliation in the context of pharmacogenomics. The study's rationale, methods, and results are well described; conclusions are appropriately inferred from results; and limitations and implications for practice are well-discussed.

However, given that the topic of Medication Reconciliation corresponds to the broader realm of patient safety & quality improvement (which transcends the scope of pharmacogenomics) I do have some suggestions for MINOR REVISIONS to improve the appeal and readability of the manuscript for a broader audience of clinicians and healthcare leaders.

1. The manuscript could benefit from more structure throughout. For example, it would be helpful to clearly state the research question(s) in indented/bulleted format after statement of purpose in Line 148.

Reply 1: Agree with clearly stating the research questions within the text, thank you for the suggestion

Changes in the text:

- What types of discrepancies on the home medication lists are identified when a pharmacist and/or pharmacy student conduct medication reconciliation via telephone encounters?
- How does medication reconciliation may impact PGx recommendations?

2. It would also be helpful to introduce subheadings within the Methods section to clarify the inclusion/exclusion criteria and processes used for data collection/analysis.

Reply 2: Appreciate the suggestion, we agree with adding subheadings. Analysis was essentially tallying interventions and calculating percentages utilizing Microsoft Excel, therefore, combined as a subheading with data collection.

Changes in the text: Added "Inclusion and Exclusion Criteria" sub heading line and

"Data collection

Data obtained prior to phone call included patient name, when pharmacogenetic test was drawn/collected, provider, clinic/department, next primary care provider appointment, if patient met criteria for 10 or more medications or high alert medications or hyperlipidemia or cardiovascular disease or depression, and when the patient message was sent to schedule a call. Data collection during/after the phone call included documenting in spreadsheet columns the number of discrepancies related to column heading. Discrepancies were defined by any variance between the patient reported medication regimen and documentation within the EMR. Discrepancies were classified into the following categories: missing/wrong dose, wrong frequency, wrong medication (defined as wrong medication formulation such as immediate release as opposed to extended release or look-alike, sound-alike medications), medication discontinued, duplicate medications, medication omissions, and added "prn" reason. Additional data points were collected to assist in demonstrating proper interval for medication lists to be considered accurate and complete such as patient taking medication

differently, patient not taking medication, Med Rec <30 days, Med Rec >30 days but <6 months, Med Rec >6 months. Furthermore, components specific to PGx were collected if the medication reconciliation was completed after the PGx review, number of medications with drug-gene relationships per CPIC, if revisions were warranted to PGx note, and a column to document medication name (used to determine if phenoconversion was applicable). Phenoconversion, or when an otherwise normal phenotype is converted to a poor metabolizer status, has been described as the Achilles heel of PGx guided medication utilization."

3. Under Results, it would be most helpful to have a Table on

Reply 3: Uncertain if the table the reviewer mentioned in comment 3 is the same as the table in comment 4, but if so please see below

Changes in the text: N/A

4. It would be helpful to have a Table summarizing the 1) type of error identified (e.g., medication omission, medication discontinuation, medication documentation etc.; 2) consequence for pharmacogenomics and 3) implication for patient safety. Such a Table would serve to highlight the main contributions of the study for a broader audience interested in Medication Reconciliation from a patient safety and quality improvement perspective.

Reply 4: Thank you for the suggestion. Table added.

Changes in the text:

Table 1

Discrepancy Classification	Potential consequence for PGx	Potential implication for patient safety
Missing/Wrong Dose	Some PGx guidelines/package labeling contain specific dosing recommendations	Dosing outside of prescribed dosage could result in either under or overdosing, each of which could affect safety/efficacy
Wrong Frequency		Altered frequency dosage could result in either under or overdosing, each of which could affect safety/efficacy
Wrong Medication	PGx recommendations may be missed, or incorrect recommendations may be made, implications if wrong medication is a strong inhibitor	Taking alternative medications unbeknownst to the treatment team could result in significant drug-drug interaction or could trigger an adverse event thought to be a new symptom thus triggering the prescribing cascade
Discontinued Medication	Incorrect recommendations may be made; implications if discontinued medication is a	Not taking medications that the healthcare believes are being taken can result in less effective

	strong inhibitor	alternative medications being used
Duplicate Medications		Can result in prescriber and healthcare team confusion with cluttered medication lists
Omissions	PGx recommendations may be missed, implications if added medication is a strong inhibitor	Taking alternative medications unbeknownst to the treatment team could result in significant drug-drug interaction or could trigger an adverse event thought to be a new symptom thus triggering the prescribing cascade
Added PRN Indication		Joint Commission requirement; Clarifies patient taking medication for correct reason

5. Similarly, the Discussion section could be enhanced with subheadings related to summary of finding; study limitations; and implications for practice & future research.

Reply 5: Agree with adding sub headers for readability. Thank you for the suggestion.

Changes in the text: Added sub header “Study Limitations” and “Implications for Practice and Future Research”.

6. Importantly the Lines 236-250 of the Discussion section could greatly benefit from additional references to initiatives to improve medication reconciliation in ambulatory care setting and the heath system context (spanning outpatient and inpatient settings), published in the broader quality, safety, and informatics literatures. Examples of relevant references are provided below.

a. Heyworth L, Clark J, Marcello TB, Paquin AM, Stewart M, Archambeault C, et al. Aligning medication reconciliation and secure messaging: qualitative study of primary care providers' perspectives. J Med Internet Res. 2013;15(12):e264-e. doi: 10.2196/jmir.2793. PMID: 24297865.

b. Rangachari P, Dellsperger KC, Fallaw D, Davis I, Sumner M, Ray W, et al. A Mixed-Method Study of Practitioners' Perspectives on Issues Related to EHR Medication Reconciliation at a Health System. Qual Manag Health Care. 2019;28(2):84-95. doi:10.1097/QMH.0000000000000208. PMID: 30801417.

c. Nassaralla CL, Naessens JM, Chaudhry R, Hansen MA, Scheitel SM. Implementation of a medication reconciliation process in an ambulatory internal medicine clinic. Qual Saf Health Care. 2007;16(2):90-4. Epub 2007/04/04. doi: 10.1136/qshc.2006.021113. PMID:17403752.

7. These studies describe efforts to identify and address barriers and facilitators to effective medication reconciliation during transitions of care. Authors could leverage this literature to gain insights into how the complex MedRec issues identified in this study (described on Lines 250-259),

could be addressed. Such an enhancement would go a long way in making the Discussion section more well-rounded and meaningful to an audience of clinicians and healthcare leaders.

Reply 6: Thank you for providing additional information for us to enhance our ambulatory reach and implications for future practice.

Changes in the text:

"A study by Rangachari and colleagues identified two main concepts for inaccuracies within medication lists, the first being lack of ownership and accountability amongst healthcare providers and the second due is to complexities related to transitions of care. An accurate medication list is valuable to all aspects of healthcare regardless of the ordering medication specialty as discrepancies pose a significant risk for patient harm."

"A study by Nassaralla and colleagues identified the addition or removal of medications from medication list and patient misreporting of medications to be common discrepancies as also noticed within our findings. Additionally, Nassaralla and colleagues described absence of route of administration and frequencies to be common discrepancies. While our study did not specifically track changes to route of administration each medication entry included the route of administration upon completion of the medication reconciliation process."

"Utilization of telephone encounters to conduct BPMH limits the availability to view medication bottles, however, healthcare institutions may develop creative technology solutions to overcome this limitation as described by Heyworth and colleagues at Veterans Affairs in Boston."

Reviewer 2

Comments:

Well done overall. General comments:

-More information would be useful re. methodology. What was the make up of your research and pharmacist team i.e. how many pharmacists and students were involved? Over what time period did you conduct the medication reconciliation interviews? Was this sufficient?

Reply 7: Agree with adding description of team and clarification on pilot duration. The manuscript is improved thanks to the suggestion to add this content.

Changes in the text: "A team of pharmacists and trained pharmacy students conducted medication reconciliation via telephone encounter during an 8-month pilot (July 2019- February 2020). Four pharmacists were responsible for conducting medication reconciliations and served as the supervising pharmacists for seventeen student pharmacists. Student pharmacists conducted medication reconciliation while on their five-week advanced learning experience PGx elective. Additionally, a PGY1 pharmacy resident completed a PGx rotation and preformed patient interviews during the 4-week block."

Specific comments

-Line 107: the final sentence of this paragraph doesn't add to or integrate with the preceding text. Consider editing or removing it.

Reply 8: Removed sentence based on reviewer feedback. We appreciate the suggestion.

Changes in the text: Removed text "By this rationale, an accurate medication list is a critical need in order to provide state-of-the-art patient care, and healthcare providers across the globe should take

every effort to prioritize medication reconciliation within their organization to elevate medical practice."

-Line 137 & 161: Define the abbreviations "PGx" before using.

Reply 9: Agree with defining PGx abbreviation. Thank you for catching that oversight.

Changes in the text: Added "pharmacogenomic (PGx)"

-Line 240: I don't really understand what you mean by the phrase "our approach provides more granularity to the type of discrepancies." Consider re-phrasing.

Reply 10: Clarified within the text regarding the PRN indication being omitted. We hope this clears up the confusion.

Changes in the text: "Our findings found a considerably higher number of discrepancies at 4.9 discrepancies per patient; however, our approach provides more granularity to the type of discrepancies such as outlining if an indication was omitted from an as needed medication."

-It's difficult to interpret Figure 1 due to size and color.

Reply 11: Re-formatted figure to increase size of font and match. If formatting to gray scale is preferred, please let us know.

Change in text: Please see revisions to figure.

Reviewer 3

Comments:

This study is highly unique and very interesting in the fact that it combines pharmacogenetics with

medication reconciliation. The principles discussed in this paper are essential and relevant. I look forward to more studies done on this topic.

Comments on the manuscript:

1. Introduction: Please clarify how (and which) Healthcare organizations are striving to become highly reliable organizations (line 79)- is this specific to medication reconciliation?

Reply 12: Thank you for this suggestion. Our hope is that all healthcare organizations are striving to be reliable organizations that provide top notch patient care. As the use of HRO is potentially confusing, we have reworked the paragraph and removed reference to HROs.

Change in text: "Healthcare organizations across the world are striving to become highly reliable organizations. Highly reliable healthcare organizations are striving for continuous process improvement and aiming for zero preventable patient harm through use of patient and medication safety initiatives in addition to other processes."

2. Line 86: Per the TJC reference used to define "medication reconciliation," communication with Healthcare teams (caregiver/patient in fact) is a part of the reconciliation process at transitions in care and not the medication reconciliation definition. These two sentences need clarification. The definition has to be explicit.

Reply 13: Thanks for the catch, the reference was corrected to reflect the definition of medication reconciliation as outlined in the national patient safety goals.

Change in text: Changed reference

3. Line 98: Adverse drug event (ADEs), Adverse drug reactions (ADRs)

Reply 14: Agree with change. Thank you for catching.

Change in text: for an “adverse drug event (ADEs)”

4. Lines 101 to 110: ASHP, WHO High-5s, National Quality Forum (Leapfrog) all state that pharmacists are considered the gold standard in obtaining an accurate medication history-- these are very important statements that should be highlighted here and supported by examples in the literature (Refs 14-16). Additionally, I encourage the authors to elaborate on the role of the pharmacist in this paragraph and in obtaining the Best Possible Medication History and defining what that means- this term is introduced in methods section, but is not defined. The mention of pharmacy involvement does not necessarily provide the "rationale" to say that an accurate medication list is a critical need across the globe, there is a missing transition here.

Reply 15: Thank you for the suggestion on defining the meaning of best possible medication history and how we provided education to our student pharmacists.

To emphasize importance of pharmacist’s role, the following was stated in the manuscript with references “Additionally, numerous studies have cited inclusion of pharmacists or trained pharmacy personnel to be the gold standard when obtaining an accurate medication list (14-16).”

Change in text: To acquire the best possible medication history (BPMH) health care providers should incorporate two components into curation of the medication list: a structured interview process to review all medications with the patient and a process to verify information obtained from the patient.

(15) In every effort to maintain the BPMH, students were educated on interview tactics and utilization of additional reliable resources such as pharmacy medication dispensing histories via internal and external records when available, medical records, and patient communication via the EMR patient portal (MyChart ®, Epic Systems Inc., Verona, WI) to send pictures of medication bottles or medication lists.

5. Line 129 - I would suggest the authors to introduce the PGx abbreviation here. This abbreviation was first used in row 137 without prior introduction.

Reply 16: Agree with review comments; previously addressed with comment from reviewer 2

Change in text: Added "pharmacogenomic (PGx)"

Methods:

1. There are several important details missing here. What is the time period of this review. How many students and what level of schooling or further training to qualify them for this role in obtaining the BPMH? How many reviewers- just the authors? Are the authors different from the supervising pharmacist in the study? My understanding is that this is a prospective review, however what is the data collection method? Was the data collected via surveys prior to analysis in Excel or just recorded in MyChart? How was internal validity achieved to ensure agreement on the assessment of discrepancies (number and type)? Is this validity primarily achieved by the one pharmacist instructing the students? What are these instructions? What do the written competencies/written scripts entail? How was non-binding of data achieved? Were there any inferential statistics for external validity or

just the mentioned descriptive statistics?

Reply 17:

- Thank you for these comments and pointing out missing details.
- Based on reviewer 2's comments added additional details surrounding student involvement.
- Competencies were discussed in the methods section following mention of student involvement, which should address concerns with internal validity and training.
- The authors of the manuscript served as the supervising pharmacists.
- Additional details surrounding data collection and analysis were included based on reviewer 2's comments.
- Analysis was solely descriptive as this was a pilot study.
- More information added to describe competency and script
- The authors of this manuscript are unfamiliar with the terminology for non-binding of data. We welcome additional information to address this comment.

Change in text: "A team of pharmacists and trained pharmacy students conducted medication reconciliation via telephone encounter during an 8-month pilot (July 2019- February 2020). Four pharmacists were responsible for conducting medication reconciliations and served as the supervising pharmacists for seventeen student pharmacists. Student pharmacists conducted medication reconciliation while on their five-week advanced learning experience PGx elective. Additionally, a PGY1 pharmacy resident completed a PGx rotation and preformed patient interviews during the 4-week block."

"Student pharmacists' instruction was provided by one pharmacist to ensure consistency and continuity in training. Educational efforts consisted of didactic learning (presentation) paired with

hands on experience via competencies. Successful completion of a written competency was required prior to any patient contact. The written competency is 20 questions and includes short answer and true/false format. Many of the short answer questions include a short scenario followed by short answer questions such as “How would you enter this?“ or “How would you update this?“ or “What other questions would you want to ask?” The standardized consistent process included scripting for students to use while initiating the telephone call and cues utilized to tailor conversations to yield the most meaningful information. Script included how to introduce themselves, reason for the call, steps to obtain what medications patient is taking, and next steps related to receiving genetic results. To acquire the best possible medication history (BPMH) health care providers should incorporate two components into curation of the medication list: a structured interview process to review all medications with the patient and a process to verify information obtained from the patient. (15) In every effort to maintain the BPMH, students were educated on interview tactics and utilization of additional reliable resources such as pharmacy medication dispensing histories via internal and external records when available, medical records, and patient communication via the EMR patient portal (MyChart ®, Epic Systems Inc., Verona, WI) to send pictures of medication bottles or medication lists. Additionally, each medication review was documented within the EMR highlighting any changes made to the medication list and overseen by a supervising pharmacist. Upon review of the documentation, student pharmacists were provided feedback and if any additional clarification was warranted the patient was contacted for clarification.”

2. Results:

How many patients actually sent pictures of medication bottles? Could this be in support of a virtual face-to-face program instead of a telephone implementation?

Reply 18: The number of patients who sent pictures of medication bottles was not collected, however, the frequency was low. Sending pictures of medication bottles would be helpful in lieu of having medication bottles physically available. This functionality paired with virtual visits could be utilized more in the future as next steps.

Changes in text: "Leveraging technology in the form of video visits may allow for more patient interaction and accurate medication lists in lieu of physical medication bottles and provide an added safety feature compared to obtaining medication information via telephone."

3. Line 189: Are these discrepancies intentional or unintentional by the prescribing physician? What qualifies a variation from a history to what the patient is taking to be considered a discrepancy?

Reply 19: As this was a pilot study, we did not track intentional versus unintentional prescribing. Based on the previous reviewer comments we elaborated more on the best possible medication history to help describe discrepancies. Any variation from the documented medication list compared to the patient reported medication list is what we considered a medication discrepancy.

Changes in text: "To acquire the best possible medication history (BPMH) health care providers should incorporate two components into curation of the medication list: a structured interview process to review all medications with the patient and a process to verify information obtained from the patient. (15) In every effort to maintain the BPMH, students were educated on interview tactics

and utilization of additional reliable resources such as pharmacy medication dispensing histories via internal and external records when available, medical records, and patient communication via the EMR patient portal (MyChart ®, Epic Systems Inc., Verona, WI) to send pictures of medication bottles or medication lists."

4. Figure 1: Please clarify the types of discrepancies in the methods section. How are "Additional Medications Added" considered omissions and not duplications? Please clarify what "wrong medication" means and how did the pharmacy team verify that it was the wrong medication for the indication.

Reply 20: Standardized terminology for "additional medications added" and "omissions" in text and figure 1.

Changes in text: Changed "Additional Medications Added (omissions)" to "omissions" in figure "Discrepancies were defined by any variance between the patient reported medication regimen and documentation within the EMR. Discrepancies were classified into the following categories: missing/wrong dose, wrong frequency, wrong medication (defined as wrong medication formulation such as immediate release as opposed to extended release or look-alike, sound-alike medications), medication discontinued, duplicate medications, medication omissions, and added "prn" reason."

5. Table 2: What is the relevance of table 2 in the paper? I encourage the authors to elaborate in the discussion. Additionally, there is mention of how the methodology of scheduling a telephone appointment may have targeted a specific patient population, but I encourage the authors to comment on the patient demographics showcased in table 1 as well.

Reply 21: Agree with comment, added further clarification for timing of medication histories.

Changes in text: "Despite over three-quarters of patients having medication reconciliation completed within the last six months, a large majority of patients had at least one discrepancy highlighting the importance of complete and thorough medication reconciliation at every visit."

"Table 1 provides a full list of patient demographics with the majority of the patient population represented as elderly Caucasian females. Over half of the patient population was identified as having hyperlipidemia and approximately one third were on 10 or more medications and high alert medications."

Reviewer 4

Comments:

I appreciate the authors' willingness to share their meaningful study. You could address the following issues to improve the quality and readability of your manuscript:

1. Title: Refine the title, e.g., "The Effect of Medication Reconciliation and Pharmacogenetic Reviews on Generating the Accurate Medication List"; "importance" shall be deleted, since the study was not designed to evaluate the clinical outcomes of the accurate medication list; seems the study was to apply a pharmacy team-based approach to generate the accurate medication lists.

Reply 22: We altered the title and hope this is satisfactory to the reviewer. An accurate medication list is needed to perform an accurate pharmacogenetic review.

Change in text: Title changed to: The Effect of Medication Reconciliation on Generating an Accurate Medication List in a Pharmacogenomic Practice

2. Abstract: to rewrite the study aims; should "improving" the medication list accuracies" be better than "assess medication list accuracies"?, and described the same aim or purpose statements in the main text; to briefly describe the study site in Methods.

Reply 23: Agree with changing assess to improving as it strengthens the aim of the study. Additionally, made reviews to include research questions which would highlight the study aim within the text per previous reviewer comments.

Change in text: "Our study aimed to identify discrepancies within the patient's medication list to ~~assess~~ improve ~~medication list accuracies~~ medication management via genetic factors through a pharmacy team-based approach."

3. Main Text:

3.1 – Introduction: (a) rewrite the purpose of the study – the statement of "…, the purpose of this study was to identify discrepancies within the patient's home medication list prior to pharmacist reviewing preemptive PGx results." is inconsistent with the aims in the Abstract of "..to apply a pharmacy team-based approach to generate the accurate medication lists"; (b) either use the terms of "aim" or "purpose", not both; (c) clearly define the study variables, independent (e.g., a dedicated team of pharmacists and trained student pharmacists, precision medicine preemptive screening program, etc.) and dependent variables (e.g., accurate medication list, medication discrepancies, review time, etc.), and use those terms constantly; (d) add the statements regarding the significance of the study or the contribution of this study in literature or practice.

Reply 24:

(a) Thank you for your suggestion and excellent point. We worked to match the aim in Abstract and Introduction.

(b) Changed to aim

(c) Thank you for the suggestion. We worked to more clearly define the variables.

(d) In the manuscript we stated "Despite the abundance of literature surrounding medication reconciliation, to the best of our knowledge there are no studies to highlight the pharmacogenomic implications." If reviewer feels this needs to be emphasized or expanded upon more, we would be open to suggestion. We also added a table including PGx and patient safety implications. Please see Reply 4.

Change in text:

(a,b) Our study aimed to identify discrepancies within the patient's home medication list prior to a pharmacist reviewing preemptive PGx results to ~~assess~~ improve medication list accuracies through a pharmacy team-based approach.

(c)

- Discrepancies were classified into the following dependent variable categories: missing/wrong dose, wrong frequency, wrong medication (defined as wrong medication formulation such as immediate release as opposed to extended release or look-alike, sound-alike medications), medication discontinued, duplicate medications, ~~additional medications added~~medication omissions, and added "prn" reason.
- Interview metrics and identified dependent variable discrepancies were tracked
- EMR discrepancy dependent variables~~ies~~ are represented in Figure 2
- - Independent variables in this study included pharmacist, student, PGx results.

3.2 – Methods: (a) describe the study design, e.g., pre and post-study or a descriptive study; (b) briefly describe the study site and its existing and the improved medication reconciliation processes, evenly including flowcharts; (c) how and when the PGx test occurred and was integrated in the process; (d) describe the exclusion criteria for patients, if there were exclusion criteria, (e) how omissions and deletions were determined; (f) describe the data collection (e.g., how review time units were collected, how to judge the accurate medication lists, etc.), data analysis, statistical analysis, and study time periods.

Reply 25:

(a) The study was a pilot project without pre and post study interventions. The pilot was more of a descriptive study.

(b) Thank you for the suggestion. Clarifying language added.

(C) Our initial aim was to complete medication reconciliation prior to PGx reviews, however, due to the patient's ability to respond at their convenience we had some patients schedule after genetic results came back. The PGx review process would start with reviewing medications and clinical picture then evaluate for genetic variants.

(d) Based on additional reviewers comments a section heading was added for inclusion criteria. Within the methods section, the inclusion criteria identifies the with pending genetic results, 18 years of age or older, MyChart account, and English speaking.

(e)Thank you for the recommendation. Additional changes were made based on previous reviewer comments.

(f) Thank you for the suggestion. Revisions were made based on previous reviewer suggestions.

Change in text:

(a) This descriptive study was submitted to the Sanford Institutional Review Board (STUDY00001624) and determined to be not human subject research.

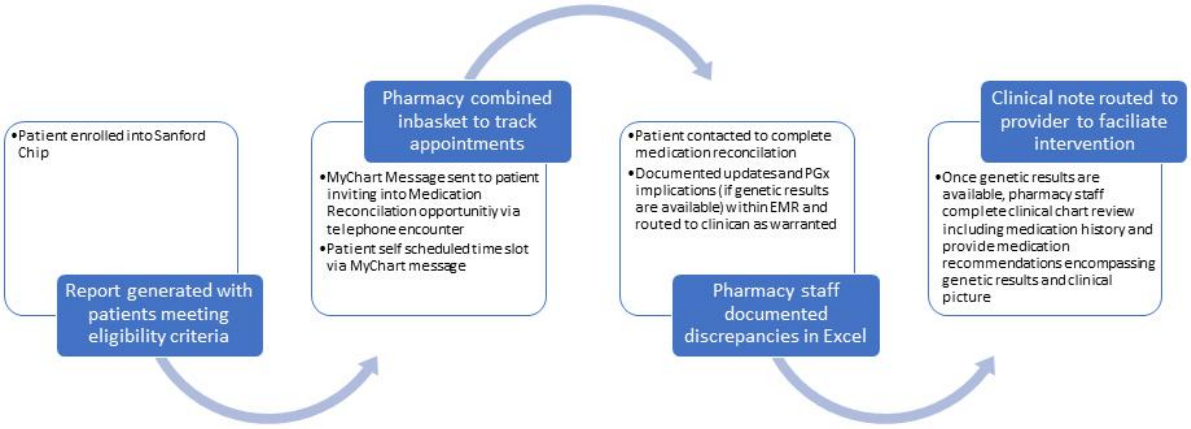
(b) Sanford Imagenetics is a department within Sanford Health, which is the largest rural healthcare institution with the United States.

Student pharmacists' instruction was provided by one pharmacist to ensure consistency and continuity in training based on Sanford Health's standardized medication reconciliation policies and procedures

(C) The new figure 1 depicts the flow from patients opting into the preemptive genetic screening to receipt of genetic results to be included in the pharmacist's PGx clinical review.

Figure 1

Medication Reconciliation Workflow in a Pharmacogenomic Practice



(d) "Inclusion and Exclusion Criteria

A report designed to identify patients enrolled in the Sanford Chip was further refined to identify patients meeting certain criteria with a focus on targeting patients most likely to be impacted by medications with drug-gene interactions as per CPIC guidelines. Patients were included if they had enrolled in the Sanford Chip and met one or more of the following criteria: patient with 10 or more medications; patients on high alert medications as defined per the Institute for Safe Medication Practices and TJC; patients with dyslipidemia; patients with cardiovascular disease; or patients with depression as identified per the problem list. The identified patients were sent a MyChart message inviting them to arrange a time for a telephone consult to review medications with a pharmacy team member. Included individuals also had to be 18 years of age or older, have a MyChart account, and be English speaking."

(e) "Discrepancies were defined by any variance between the patient reported medication regimen and documentation within the EMR."

(f) "Data collection

Data obtained prior to phone call included patient name, when pharmacogenetic test was drawn/collected, provider, clinic/department, next primary care provider appointment, if patient met criteria for 10 or more medications or high alert medications or hyperlipidemia or cardiovascular disease or depression, and when the patient message was sent to schedule a call. Data collection during/after the phone call included documenting in spreadsheet columns the number of discrepancies related to column heading. Discrepancies were defined by any variance between the patient reported medication regimen and documentation within the EMR. Discrepancies were classified into the

following categories: missing/wrong dose, wrong frequency, wrong medication (defined as wrong medication formulation such as immediate release as opposed to extended release or look-alike, sound-alike medications), medication discontinued, duplicate medications, medication omissions, and added "prn" reason. Additional data points were collected to assist in demonstrating proper interval for medication lists to be considered accurate and complete such as patient taking medication differently, patient not taking medication, Med Rec <30 days, Med Rec >30 days but <6 months, Med Rec >6 months. Furthermore, components specific to PGx were collected if the medication reconciliation was completed after the PGx review, number of medications with drug-gene relationships per CPIC, if revisions were warranted to PGx note, and a column to document medication name (used to determine if phenoconversion was applicable). Phenoconversion, or when an otherwise normal phenotype is converted to a poor metabolizer status, has been described as the Achilles heel of PGx guided medication utilization (29)."

"A team of pharmacists and trained pharmacy students conducted medication reconciliation via telephone encounter during an 8-month pilot (July 2019- February 2020). Four pharmacists were responsible for conducting medication reconciliations and served as the supervising pharmacists for seventeen student pharmacists. Student pharmacists conducted medication reconciliation while on their five-week advanced learning experience PGx elective. Additionally, a PGY1 pharmacy resident completed a PGx rotation and preformed patient interviews during the 4-week block."

3.3 – Results: (a) provide subheadings for each dependent variable; (b) consider to move some

statements (e.g., Phenoconversion, or when an otherwise normal phenotype is converted to a poor metabolizer status, has been described… phenoconversion to CYP2D6 poor metabolizer) to Method.

Reply 26:

(a) Thank you for the suggestion, however, added additional subheadings based on previous reviewers comments. If you feel further subheadings are warranted, please advise to ensure ease of readability.

(b) Thank you for the suggestion. Moved concept of phenoconversion to methods as well as what components were tracked related to PGx elements.

Change in text:

(b) "Furthermore, components specific to PGx were collected if the medication reconciliation was completed after the PGx review, number of medications with drug-gene relationships per CPIC, if revisions were warranted to PGx note, and a column to document medication name (used to determine if phenoconversion was applicable). Phenoconversion, or when an otherwise normal phenotype is converted to a poor metabolizer status, has been described as the Achilles heel of PGx guided medication utilization."