TexMed 2017 Quality Research Abstract

Please complete all of the following sections and include supporting charts and graphs in this document. Submit a total of two documents - this document and the Biographical Data and Disclosure Form to posters@texmed.org by midnight March 17, 2017.

Description and Selection Criteria

- Applicants should demonstrate an understanding of systematic investigation through research development, testing and evaluation designed to develop or contribute to generalizable knowledge. Judges will use the scoring described in this matrix to identify projects to be presented at the conference, as well as, projects to be considered for the awards.

- The focus for Quality Research abstracts is any project that is conducted with an intent to answer a research question or test a hypothesis related to quality improvement (QI). It is also intended to develop or contribute to generalizable knowledge. Projects in Quality Research need to have approval from an Institutional Review Board or have a formal letter of exemption. Traditional QI activities, on the other hand, cover the gamut of projects that are:
  - aimed at improving local systems of care, or improving the performance of institutional practice;
  - designed to bring about immediate improvements in health care delivery; or
  - intended to compare a program/process/system to an established set of standards such as standard of care, recommended practice guidelines, or other benchmarks.

  If you have a question about whether your project is Quality Research or a QI project, please contact us.

- These submissions should provide general information related to the one of the following categories: patient safety, patient centered care, equity, timeliness, efficiency, or effectiveness.

- Maximum points delineated with a brief explanation of the content that should be included under each section. Applicants may describe the problem and results in narrative or graphic format.

PROJECT NAME: *The effect of A Dedicated Pharmacy Technician on The Accuracy and Time to medication reconciliation in the Emergency Room*

Institution or Practice Name: United Regional Hospital AND Wichita Falls Family Practice Residency Program, Wichita Falls, Texas

Setting of Care: Emergency room

Primary Author: Adil Ahmed MD, MSc

Secondary Author: Sampath Medepalli MD, Doan Noe, PharmD, BCPS, Matt Baker PharmD, BCPS, Arthur Szczerba MD, Amr Takieldeen MD, Ahmed Amari MD, Daniela Johnson MD, David Carlston PhD

Is the Primary Author, Secondary Author or Member of Project Team a TMA member (required)?   ☒ Yes ☐ No

Please provide name(s): Adil Ahmed MD, MSc, Sampath Medepalli MD, and Arthur Szczerba MD

Project Category: *(Choose all categories)*

☒ Patient Safety   ☒ Patient Centered Care   ☐ Timeliness ☐ Enhanced Perioperative Recovery

☐ Efficiency   ☐ Effectiveness   ☐ Equity   ☐ Disaster Medicine & Emergency Preparedness

For this poster session, TMA is looking for research projects that demonstrate the six aspects of Quality Care as defined by the Institute of Medicine.

| Safe - avoids injuries to patients from care that is intended to help them
| Timely - reduces waits and delays for both those who receive care and those who give care
| Effective - based on scientific knowledge, extended to all likely to benefit, while avoiding underuse and overuse
| Equitable - provides consistent quality, without regard to personal characteristics such as gender, ethnicity, geographic location, and socioeconomic status
| Efficient - avoids waste, including waste of equipment, supplies, ideas, and energy
| Patient centered - respects and responds to individual patient preferences, needs, and values, ensuring that patient values guide all clinical decisions

Introduction (15 points max): *Describe 1) where the work was completed; 2) what faculty/staff/patient groups were involved, and 3) sufficient background information provided to establish the significance of the problem.*

BACKGROUND

Medication errors are one of the leading causes of adverse events in hospitalized patients. Chart reviews revealed that over half of all hospital medication errors occur at interfaces of care [1]. Medication reconciliation is a process that occurs at multiple levels of care: during admission, transfer, and discharge. The main goal for medication reconciliation is to eliminate unintentional medication errors such as omissions, duplications, and incorrect dosages [2]. This process is complex and challenging, due to the clerical and clinical skills required to accurately collect a medication history. Additional factors also complicate the process (e.g., multiple sources of information, discrepancies between documentation and actual medication usage, patient willingness and/or ability to provide medication information) [3,4] The Joint Commission has deemed that the reconciliation process lends to the patient safety, especially among patients taking multiple medications, and has made medication reconciliation a National Patient Safety goal since 2005 [4].

PRELIMINARY STUDIES AND KNOWLEDGE GAP

Medication reconciliation at all points of transition of care is advantageous to reduce medication discrepancies. However, medication discrepancies are highly prevalent; in fact, up to 67% of inpatients have at least one unexplained discrepancy in their prescription history at the time of admission [5]. If these discrepancies are not found or rectified these discrepancies will likely persist until discharge. It is prudent to address these discrepancies at time of admission, to ensure clinical decisions made during the patient's stay are related to the most accurate information.

There are many confounding factors that may contribute to the inability to obtain an accurate medication history. For example, studies have shown that the involvement of pharmacy personnel (i.e. pharmacists or trained pharmacy technicians) has a positive impact on medication error, as pharmacy personnel have more dedicated time to thoroughly interview the patient and follow-up with physicians' offices or outpatient

pharmacies for medication lists [6]. However, there are few studies that identify specific patient factors (e.g. disease state, number of medications, acuity of presentation) that may compound the difficulty of achieving an accurate medication history at time of admission.

United Regional Hospital is a Level II Trauma center and community hospital that serves a nine county area. It also serves as the primary stroke center for the region. They average approximately 15,000 admissions per year. With a dedicated quality team focused on improving the processes, United Regional Healthcare Systems is working to identify their best process to produce a "good faith effort" in obtaining accurate medication histories. Therefore, this study was conducted in collaboration with United Regional pharmacy department and Wichita Falls Family Practice Residency Program (affiliated with University of North Texas) staffed by 24 residents across three post graduate levels .

Hypothesis (15 points max): *State the pertinent research or change hypothesis. Using if/then format, describe the 1) assumption; 2) condition; and 3) prediction(s).*

In adults admitted from the emergency room in a level II trauma center, the addition of a pharmacy technician will improve the frequency and the timing of the medication reconciliation documented in the OMR (outpatient medication review).

Methods (25 points max): *Describe the specific methods, resources, procedures, models and/or programs used to study and test the subject of the investigation. Note charts, graphs and tables here and send as addendum with abstract form.*

This is a prospective before and after study conducted at United Regional Health Care System in Wichita Falls, Texas.

Procedure

Adults patients who admitted through the emergency room between Nov, 2016 to Feb, 2017 were included in the sample; direct admissions, pregnant women, and pediatric patients (<18 years old) were

excluded. Data related to Outpatient Medication Review (OMR) was extracted, prior to intervention. This data indicated when the patient's list was thoroughly reviewed as well as when the Admission Reconciliation (AMR) was completed by the physician. The benchmark times for comparison (used by the hospital medication reconciliation policy) are 6 hours for OMR completion and 24 hours for AMR completion.

Intervention

On January, 2017, a dedicated pharmacy technician was placed in the emergency room to focus on obtaining accurate home medication histories for admitted patients. The technicians are staffed at peak hours during the day (1pm to 9pm), seven days a week.

STUDY OUTCOMES

The rate of timely reconciliation. This is denoted in two ways. First, frequency of adequate medication reconciliation defined as the time to OMR within the 6 hours benchmark. The second is the AMR being saved as complete and we are comparing it to the 24 hour benchmark. The hypothesis is that a dedicated pharmacy technician will have a better rate of timeliness in saving the OMR, thus increasing the timeliness of the AMR saved to completion.

DATA COLLECTION

We utilized Allscripts© electronic medical records (EMR) to extract data for this study. Data were extracted in two ways; first through electronic extraction. Secondly, data will be manually extracted from medication reconciliation sheets.

STATISTICAL APROACH

For the baseline characteristics, data will be reported as proportions, mean±SD, or median (interquartile range). Quantitative continuous variables will be analyzed using the unpaired Student's t-test or the Mann-Whitney U test. Qualitative or categorical variables analyzed using the chi-square test or Fisher's exact tests. Matched paired analysis will be used before and after analysis for each category (AMR and OMR). P-value will be calculated using Wilcoxon Signed Rank test.

Results (25 points max): *Specifically explain what was discovered, accomplished, collected and/or produced; supports hypothesis and conclusions with adequate evidence and includes quantitative data. Note charts, graphs and tables here and send as addendum with abstract form.*

During the study period, from November 2016 to February 2017, a total of 3,746 emergency room visits were evaluated - 1,756 (47%) before utilization of the pharmacy tech in the reconciliation process and 1990 (53%) after implementation of the pharmacy tech.

OMR was completed 756 times, 206 times (27%) before implementation and 550 (73%) after implementation. Within 24 hours of admission, the total number of medications reconciled by the pharmacy technician was 2755 medications, 863 (31%) before and 1029 (37%) after implementation (Table 1). The percentage of OMR completed by pharmacy technician and the number of OMR completed with 24 hours were increasing during the study period (see Figure 1). Before and after implementation, the average times to compilation were (15.15, 13.45) and (15.65, 14.30) hours for OMR and AMR respectively (Figure 2). Matched paired analysis showed a significant reduction in time with a Mean difference (MD 95%CI) of 0.5 (-1.8-0.76-) *p-value <01* and a significant difference of -0.7 (-2.2 - 0.78) p-value 0.01 for OMR and AMR respectively.

Conclusions/ Discussion (20 points max): *Provide a succinct interpretation of the results and evaluate what the results mean to the investigation, OR evaluate the relevance or uniqueness of what was accomplished in the immediate context of the project's purpose and describe how the investigation fits within a larger field.*

In the current study, the addition of a pharmacy technician to review home medication lists in the emergency room showed significant improvement in the number of outpatient medications reviews completed. The time to reconciliation also improved significantly for physicians; however, the magnitude of reduction demonstrated minimal clinical significance. Perhaps the limited time the pharmacy technician is present to perform their duties in the emergency room can explain this observation. The limited study period with no wash out period could be another explanation. Our future projects, in addition to focus on different patient oriented outcomes, will also examine the feasibility and cost of staffing a

pharmacy technician 24/7 in the emergency room to review home medication lists to complete outpatient

medications review.

Table 1: Baseline characteristics of the study

Variables	Nov	Dec	Jan	Feb
Number of OMRs completed by Tech	124	82	198	352
Number of ED Admissions	842	914	1044	946
OMR Avg Time to Completion (hours)	16.6	13.7	13.7	13.2
AMR Avg Time to Completion	16.1	15.2	12.1	16.5
OMR Changes within 24 hours	438	425	562	467
Pharmacy OMR Interventions	162	151	200	186

OMR: Outpatient Medication Review; AMR: Admission Reconciliation

Figure 1; the percentage of outpatient medication recompilation completed by pharmacy technician and the average number of completed OMR within 24 hour periods were increasing during the study period
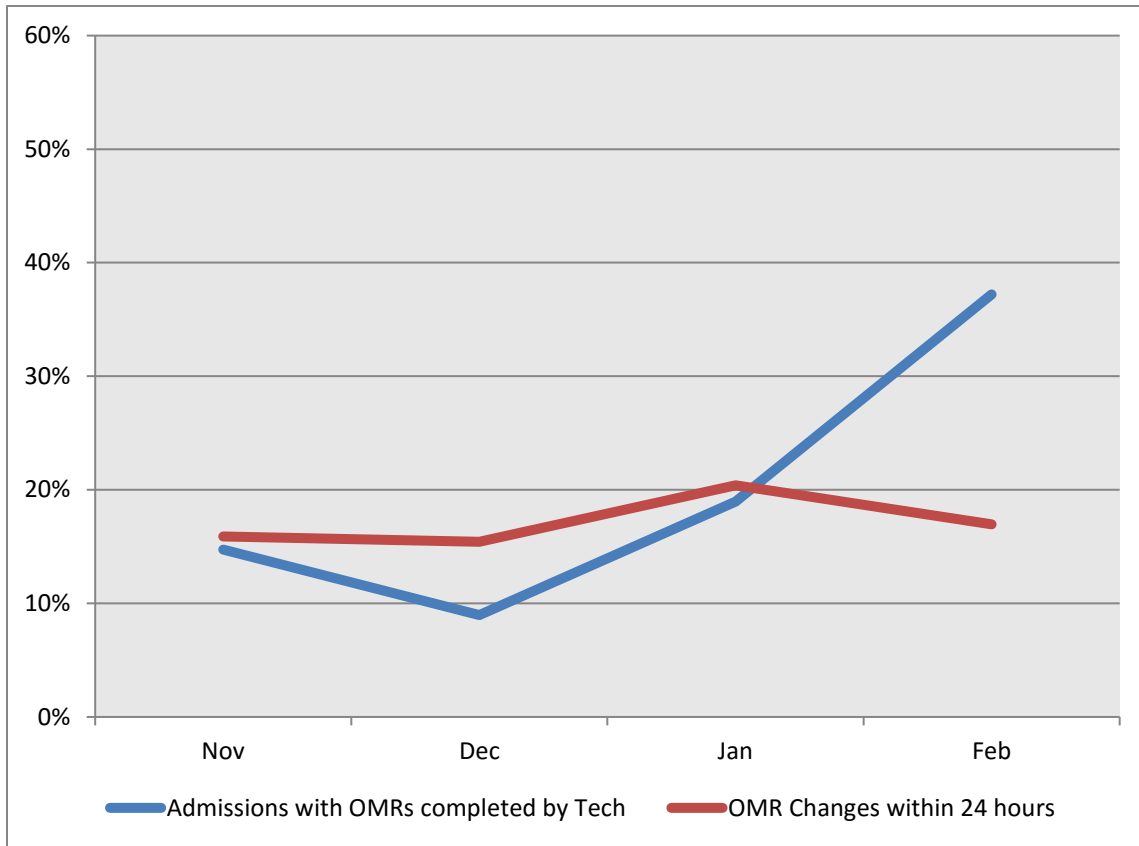
OMR: Outpatient Medication Review; AMR: Admission Reconciliation

Figure 2: The changes of the average time to AMR and EMR, the statistical reduction did not change drastically despite the increase in the rates of OMR and AMR during the study period
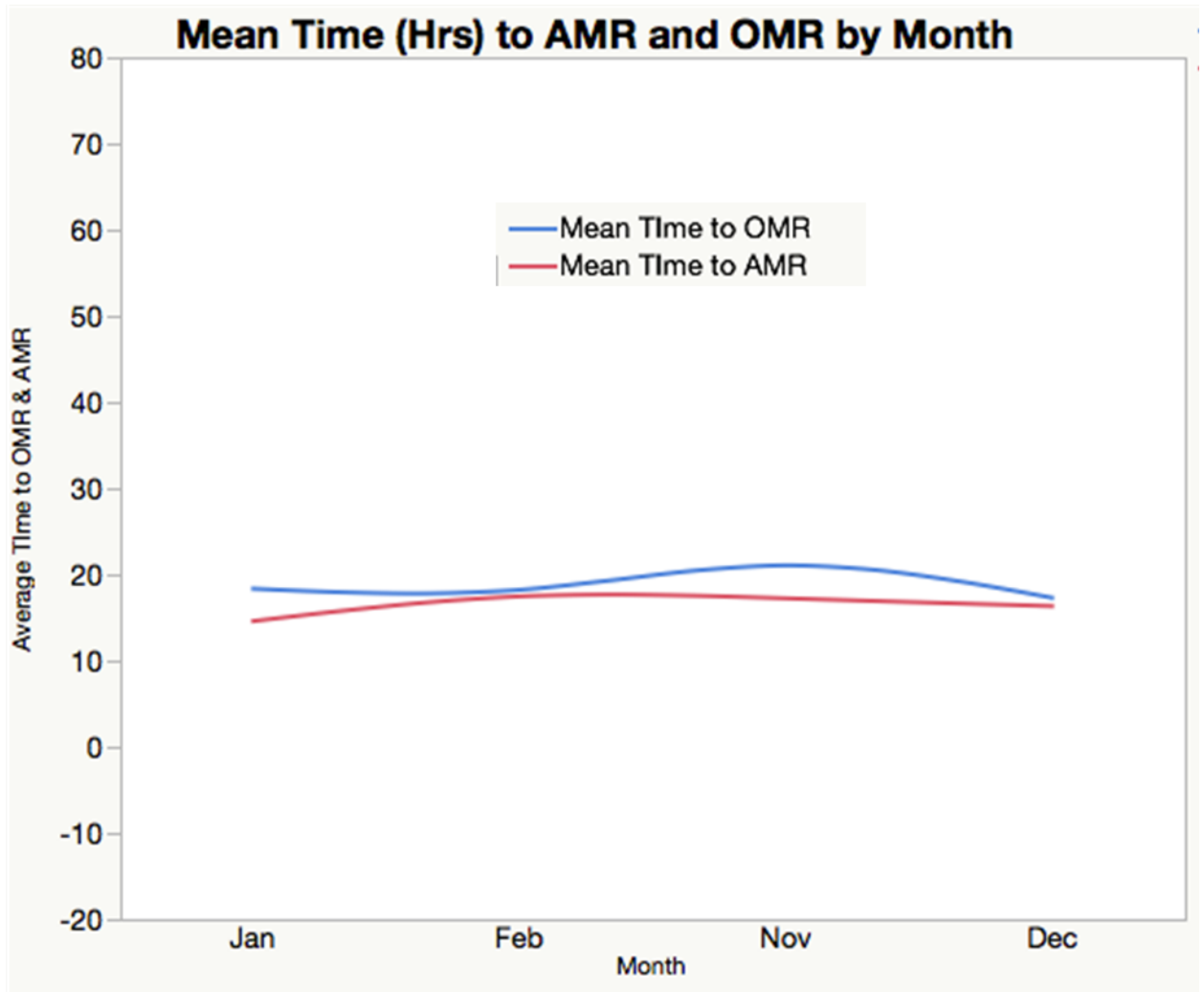
OMR: Outpatient Medication Review; AMR: Admission Reconciliation

References:

1.)   Rozich JD, Resar RK. Medication Safety: One Organization's Approach to the Challenge. Joint Commission Journal of Quality and Safety, 2004, Jan: 30(1): 5-14.

2.)   AHRQ Medication Reconciliation. Agency for Healthcare Research and Quality, Rockville, MD. https://psnet.ahrq.gov/primers/primer/1/medication-reconciliation Accessed 2/26/2017

3.)   Al-Ubaydli M, Van Wagenberg M et al. Electronic Medication Reconciliation: Practices for Streamlining Information Transfer (Prepared by True North). Washington, D.C. The Advisory Board Company. Revised 2007.

4.)   2017 Hospital National Patient Safety Goals. The Joint Commission. https://www.jointcommission.org/assets/1/6/2017_NPSG_HAP_ER.pdf Accessed 2/26/2017

5.)   Tam VC, Knowled SR, Cornish PL et al. Frequency, type and clinical importance of medication history errors at admission to hospital: systematic review. CMAJ. Aug 30 2005; 173(5):510-515

6.)   Kramer JS, Stewart MR, Fogg SM et al. A Quantitative Evaluation of Medication Histories and Reconciliation by Discipline. Hosp Pharm 2014;49:826-838