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Dated: April 29, 2013

EVALUATION OF PHARMACISTS' PERSPECTIVES TOWARDS PEER REVIEW AND IDENTIFICATION OF
OPPORTUNITIES FOR IMPROVEMENT

By

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ABSTRACT

Evaluation of pharmacists' perspectives towards peer review and identification of opportunities for improvement

PURPOSE: The purpose of this study is to identify barriers to peer review that could hinder error reporting and successful quality improvement initiatives within the pharmacy department at the study institution. Additionally, this study is intended to help identify and develop strategies to correct negative perceptions among pharmacists regarding peer review.

METHODS: An electronic survey was developed to evaluate pharmacist perceptions of safety culture and peer review procedures for medication errors. The survey was validated by three members of this study and tested for reliability by a subset of ten individuals from the target audience. This survey was disseminated to all pharmacists practicing at the study institution as well as to pharmacist members of the state health-system pharmacist society. Completion of the survey was voluntary and anonymity was preserved. The survey period was from February 4, 2013 to February 28, 2013. Data was collected and statistical analysis utilizing the Student's t-test was performed to compare perspectives between the two pharmacy groups.

RESULTS: A number of significant gaps in perception were discovered in this evaluation. In particular, pharmacists at the study institution expressed concerns regarding work load and punitive actions as a result of error reporting more so than the comparison group which was comprised of pharmacist members of the Texas Society of Health-System Pharmacists. Also pharmacists within the study group were mostly undecided about the effectiveness of peer review and its potential to bring about improvements.

CONCLUSIONS: This study highlights the need for open discourse and education about Just Culture and safety culture concepts as a means to combat negative perceptions that impact error reporting and can impede quality improvement endeavors within the department.

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Important Concepts:

Just Culture: A system of justice (disciplinary and enforcement action) that reflects what we now know of system design, human free will and our inescapable human fallibility (David Marx)

Culture of Safety: Acknowledgment of the high-risk nature of an organization's activities and the determination to achieve consistently safe operations (Agency for Healthcare Research and Quality)

- A blame-free environment where individuals are able to report errors or near misses without fear of reprimand or punishment
- Encouragement of collaboration across ranks and disciplines to seek solutions to patient safety problems
- Organizational commitment of resources to address safety concerns

INTRODUCTION

Patient safety and the need for quality improvements in healthcare have become the focus of many U.S. hospitals since the release of key foundational reports from the Institute of Medicine (IOM) including *To Err is Human*¹, *Crossing the Quality Chasm*², and *Patient Safety*³. Of note these reports estimate that medical errors caused from 44,000 to 98,000 preventable deaths each year and were associated with health expenditures ranging from \$17 to \$29 billion dollars.¹⁻³ Many advances in healthcare have been made following the publication of these reports including the integration of information technology, development of performance standards and metrics, increased advocacy for error reporting and the implementation of improved safety processes.⁴ In spite of these advancements, there remains a significant opportunity to further improve safety systems and reduce errors. For these purposes, the IOM encourages the development of a national health information infrastructure as well as patient safety programs in health care organizations.

Furthermore, as a result of increased awareness, federal agencies such as the Agency for Healthcare Research and Quality (AHRQ) have amplified efforts to study and eliminate medical errors as well as develop systems to detect errors and enhance safety.^{4,5} The agency also promotes the implementation of safe medication use systems as well as systems that capture adverse events and programs that manage at-risk behaviors in healthcare organizations.⁶ In operating a safe medication use system, it is critical that a strategic plan for advancing patient safety is developed and is the institutional focus.⁷ Moreover, the reporting of medication errors is also a critical component of maintaining a safe medication use system and in many health systems, error reporting can be enhanced by creating a non-punitive environment. In non-

punitive environments, quality improvement is an educational and collaborative endeavor. In contrast, punitive environments blame and sometimes severely punish healthcare workers by jeopardizing job security and professional licenses.⁸ Error reporting will likely be low under these conditions.

Peer review is a quality improvement process, utilizing a group of professional peers, in which final decisions about quality of care are made.^{9,10} The peer review process is frequently used among various healthcare disciplines (physicians, nurses, pharmacists) as a means to improve the quality of care provided to patients specifically by identifying opportunities to improve processes of care, proactively mitigating risks, and fostering continuous learning. Among pharmacists, peer review is primarily used as a method to review medication errors and identify system improvements. However, it is also used for quality assurance of pharmacists' clinical interventions as well as for continuous professional development in some hospitals.¹⁰⁻¹²

While peer review procedures may differ from institution to institution, a common feature of peer review committees is the need to differentiate responses to human error, at-risk behavior and reckless behavior.¹³ Human errors are unintentional and typically are due to flaws in the system whereas errors due to at risk behavior occur when workers lose the perception of the potential risk associated with a process. In non-punitive environments, human errors are addressed through system redesigns and at risk behavior is handled by repairing any system-based problems that encourage this behavior. Errors due to reckless behavior (i.e. intentional actions that go against norms of practice) should be handled with disciplinary actions and remediation in accordance with departmental and institutional policies. The process of peer

review is confidential and protected by state statutes, and deliberations of the committee are thereby immune from discovery.¹⁴ This confidentiality should encourage healthcare professionals to participate in the review process. However, there are still questions among pharmacist professionals on how best to define quality and how peer review processes can effectively enable quality assurance efforts.¹⁵

At St. Luke's Episcopal Hospital (SLEH) the peer review process is a relatively newly employed quality improvement method used to periodically analyze standards of quality, identify standards that are not being met, and improve tracking of departmental performance measures. In particular, medication errors are reviewed by a committee of professional peers and deliberations regarding adherence to standard operating procedures are made. Within the Department of Pharmacy, peer review is a component of the Medication Safety and Quality Program. Foundational documents which provided rationale and regulatory insight on peer review procedures included:

- Texas State Board of Pharmacy Guidelines (TEX OC. CODE ANN. §564.102: Texas Statutes-Section 564.102: Pharmacy Peer Review Committee)
- The Just Culture Model (David Marx 2001)
- Unsafe Acts Algorithm (James Reason 1997)

Peer Review Committee members include five clinical pharmacists with a range of experience and work history at SLEH that are selected upon recommendations from pharmacy managers and approved by the Director of Pharmacy. The committee is also comprised of one Medication

Safety Manager who serves as a non-voting facilitator and recording secretary. Events that trigger the peer review process include Patient Safety Net Reports, pharmacist interventions related to Order Entry or Dispensing Near Miss Reports and action plans from Event Analysis. Committee meetings are held quarterly and as needed. The first two reviews used a Level of Deviation Model to determine performance levels (described in Figure 1) associated with medication events.

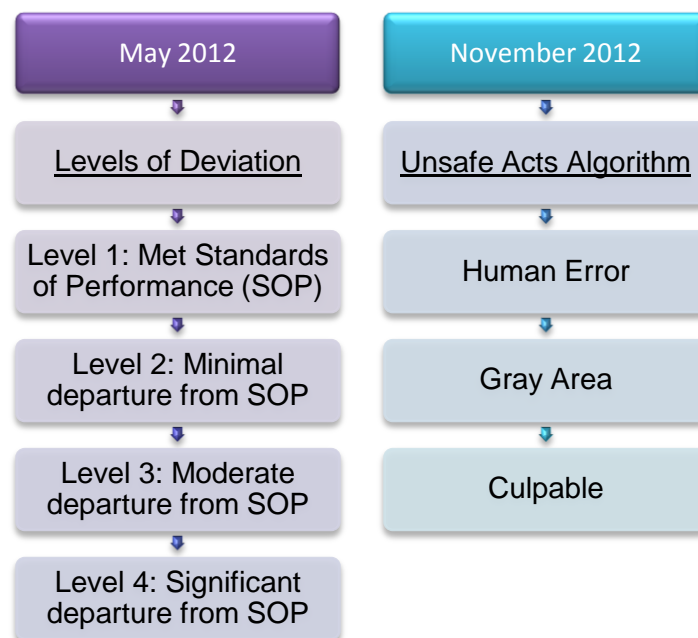


Figure 1: Methodology Used to Evaluate Performance in Peer Review Process

Currently however, Level of performance is determined for each event reviewed by the committee utilizing an adapted Unsafe Acts Algorithm (Figure 2).

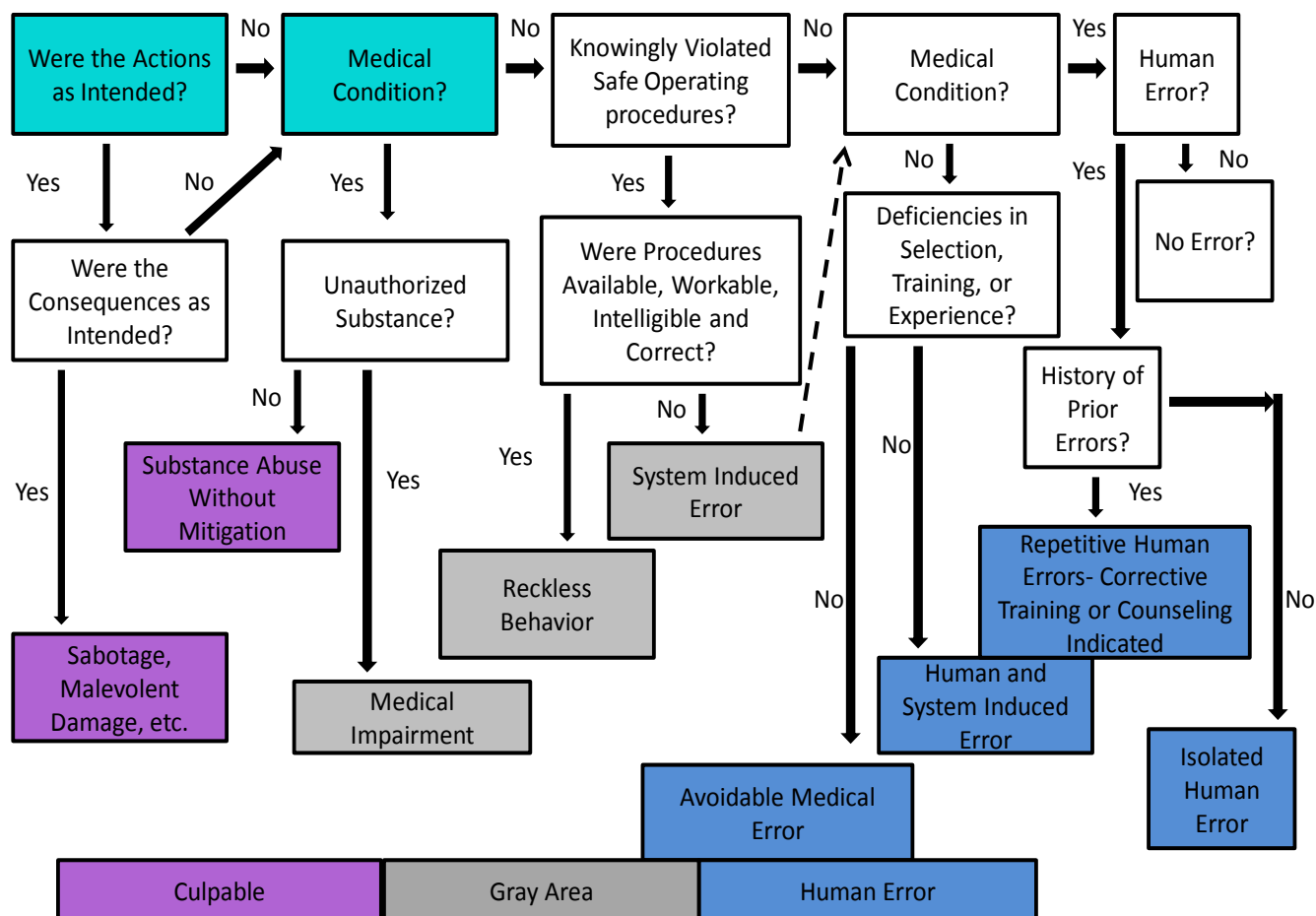


Figure 2: SLEH Pharmacy Peer Review Unsafe Acts Algorithm

Furthermore, principles of the Just Culture Model provide a framework for understanding and identifying human errors that should be consoled, at-risk behaviors that warrant coaching and reckless behaviors that should be remediated. Actions employed after the peer review decision are determined by what needs to be addressed. Examples include:

- System issues → Process Improvement
- Repetitive human errors → Focused Audits
- Negligent behavior → Corrective Action

However, as this is a fairly new process adopted by the department, efforts should be made to identify any potential barriers to this quality improvement process and to error reporting in general.

OBJECTIVES

In this study we propose to evaluate the perceptions of SLEH pharmacists towards the utility of a peer review process in relation to the larger scheme of safety culture within the department.

Specific aims include:

1. Identify any perceptions regarding peer review among SLEH pharmacists and non-SLEH pharmacists.
2. To determine if there are any significant differences in perceptions among SLEH pharmacists in comparison with non-SLEH pharmacists.
3. To identify effective strategies to address pharmacist misconceptions related to peer review.

HYPOTHESIS

The null hypothesis is that there are no differences in pharmacists' perspectives regarding safety culture and peer review and therefore no opportunities for improvement. The alternative hypothesis is that there is a difference in pharmacists' perspectives regarding safety culture and peer review and there subsequently will be opportunities to identify and implement improvement.

METHODS

This study was a survey based evaluation of pharmacist perceptions of safety culture and peer review procedures for medication errors. The survey was adapted from the Institute of Safe Medication Practices (ISMP) Medication Safety Self Assessment for Hospitals (2011) as well as the Agency for Healthcare Research and Quality (AHRQ) Hospital Survey on Patient Safety Culture (2012). A copy of the survey is provided in Appendix 1. Prior to distribution, the peer review survey was validated by members of the study and tested for reliability by a subset of the target audience. Ten individuals participated in reliability testing of the survey. Each participant completed the survey twice over a three week period with a one week washout period between the first and second attempt. Reliability was confirmed using Spearman's Rank Correlation. Electronic surveys were administered to SLEH pharmacists as well as to the pharmacist membership of the Texas Society of Health-System Pharmacists (TSHP). Completion of the survey was voluntary and anonymity was preserved. During the final week of the open survey period, two one-hour "Survey and Snack" sessions were held in order to promote participation among SLEH pharmacists. During these sessions, computer terminals in Central

Pharmacy and snacks were made available to pharmacists that wished to participate. Data was collected and analyzed using descriptive statistics. In addition, Fisher's exact test and Chi-square test were used to analyze categorical data and Student's t-test was used to analyze continuous data.

RESULTS

Test retest reliability was high for each subject tested (Spearman's correlation range was 0.808-0.949). After validation and reliability testing, the survey was sent to 768 pharmacist members of Texas Society of Health System Pharmacist. There were 155 responses returned giving a response rate of approximately 20%. 16 surveys were excluded due to incompleteness therefore a total of 139 surveys were reviewed for the purposes of this study. Additionally, surveys were sent to 96 pharmacists currently employed at SLEH. There were 56 responses returned and a resulting response rate of 58%. Four surveys were excluded due to incompleteness; consequently 52 surveys were included for review.

SLEH is an 864 licensed bed not-for-profit hospital with a specialty in medical and surgical cardiology services. At the institution, pharmacy services are managed internally and medication safety personnel are employed within the Department of Pharmacy. Furthermore the department provides a variety of residency training opportunities in anticipation of graduating six PGY1 Pharmacy Practice residents, one PGY2 MS/ Pharmacy Administration resident, and one PGY2 resident annually in each of the following specialties; Cardiology, Critical Care and Transplant. In comparison, while the majority of TSHP pharmacist respondents indicated working in a hospital based practice setting within a large (greater than 500 bed) not-

for profit institution with a general medicine and surgical specialty, there were also a great deal of pharmacists representing small to mid size state and investor owned institutions with a variety of specialty services (Table 1). A sub-analysis of the data was conducted to identify any significant gaps in perspective when comparisons between similar institutions are made. The results of this sub-analysis are included on page 23. Between the two groups surveyed, there was no significant difference in approach to management of pharmacy services however there was a statistically significant difference in the percentage of hospitals employing full or part-time medication safety personnel as well as those that had established and gained accreditation status for pharmacy residency training programs. Of note, 51% of TSHP respondents indicated having a pharmacy peer review process in place at their respective institutions.

Table 1: Hospital Demographics of Survey Respondents

Characteristic	TSHP [n=139; (%)]	SLEH [n=52; (%)]	p-value
Hospital-based practice setting			
Yes	128 (92.1)	52 (100)	.082
No	11 (7.9)	0	
No. licensed beds			
<100	14 (10)	0	
100- 299	22 (15.8)	0	
300- 499	30 (21.6)	0	
≥ 500	62 (44.6)	52 (100)	<0.0001
Type of organization	(n=138)	(n= 51)	
State or local government	28 (20)	1(2) ^E	----
Non-government, not-for-profit	60 (43.5)	52 (100)	<0.0001
Investor-owned, for profit	32 (23.2)	3(5.8) ^E	----
Military	4 (2.9)	0	
Veterans Affairs	12 (8.7)	0	
US Public Health Service	1 (0.7)	0	
Other: Own Business	1 (0.7)	0	
Type of service	(n=136)		
General medicine and surgical	99 (72.8)	22 (42.3)	----
Long Term Acute Care (LTAC)	3 (2.2)	0	
Specialty: Cardiology	5 (3.8)	28 (53.8)	<0.0001
Specialty: Oncology	11 (8.2)	0	
Specialty: Orthopedic	1 (0.7)	0	
Specialty: Pediatric	4 (2.9)	0	
Specialty: Psychiatric	0	1 (1.9) ^E	----
Specialty: Rehabilitation	3 (2.2)	1 (1.9) ^E	----
Other: Group Purchasing Organization (Consultant)	1 (0.7)	0	
Multiple Specialties	3 (2.2)	0	
Ambulatory Care	2 (1.5)	0	
Hospice/Geriatrics	2 (1.5)	0	
Transplant	1 (0.7)	0	
Trauma	1 (0.7)	0	
Management of pharmacy services			
Internal	134 (96)	52 (100)	0.33
External (Outsourced)	5 (4)	0	
Full or part-time Medication Safety personnel	(n=137)		
Yes	88 (64.2)	52 (100)	<0.0001
No	49 (35.8)	0	
Accredited residency training program			
Yes	72 (51.8)	52 (100)	<0.0001
No	67 (48.2)	0	
Anticipated number of residency graduates for 2012-2013	(n=72)		
1-2	15 (20.8)	1 (1.9) ^E	----
3-5	17 (23.6)	5 (9.6) ^E	----
>5	38 (52.8)	46 (88.5)	<0.0001
Unknown	2 (2.8)	0	

^E These responses were recorded in error.

With regards to demographic profiles of respondents, there were more clinical pharmacists and specialists/coordinators in the SLEH group compared to the TSHP group which were mostly represented by pharmacy managers (Table 2). Due to the belief that this disparity could significantly impact overall survey results, a sub-analysis of the data was conducted in order to obtain a direct comparison of perspectives between TSHP and SLEH front line pharmacy staff. The results of this sub-analysis are included on page 23. There were no significant differences in years of service or direct patient contact between groups.

Table 2: Professional Profile of Survey Respondents	TSHP [n=139; (%)]	SLEH [n=52; (%)]	p-value
Current staff position	(n=138)		
Staff Pharmacist	34 (24.6)	32 (61.5)	<0.0001
Informatics Pharmacist	2 (1.4)	1 (1.9)	1.0
Clinical Specialist	34 (24.6)	7 (13.5)	0.11
Medication Safety Officer	1 (0.7)	0	1.0
Pharmacy Manager	40 (30)	3 (5.8)	0.0004
Other: Supervisor/ Pharmacist-In-Charge	3 (2.2)	0	0.56
Clinical Coordinator	2 (1.4)	0	1.0
Director of Pharmacy or Upper Management	9 (6.5)	2 (3.8)	0.73
Faculty	1 (0.7)	0	1.0
Specialty Service Manager	2 (1.4)	0	1.0
Resident	10 (7.2)	7 (13.5)	0.25
Years of service at current hospital	(n=138)	(n=51)	
Less than a year	14 (10)	9 (17.6)	0.21
1 to 5 years	54 (39)	18 (35.3)	0.74
6 to 10 years	22 (15.9)	6 (11.8)	0.65
11 to 15 years	25 (18)	6 (11.8)	0.38
16 to 20 years	2 (1.4)	4 (7.8)	0.05
21 or more years	22 (15.9)	8 (15.7)	1.0
Direct patient contact		(n=52)	
Yes	76 (54.7)	31 (59.6)	0.62
No	63 (45.3)	21 (40.4)	

In assessing pharmacist's perspectives towards safety culture, major disparities were related to workload and staffing provisions and punitive action in response to error reporting (Table 3). In particular, SLEH pharmacists were more likely to disagree that current staffing provisions are adequate to handle the workload ($p=0.001$) and more likely to agree that work was being done in "crisis mode" in which too much was trying to be done too quickly ($p=0.04$), both of which are linked to the SLEH perspective that in some cases, patient safety is sacrificed to get more work done ($p=0.04$).

Table 3: Pharmacists' Perspective
(Significant Differences or Trends)*

Survey Questions	[mode, mean \pm SD]				
	TSHP (n=139)		SLEH (n=52)		p-value
1. We have enough staff to handle the workload.	4	3.18 \pm 1.02	2	2.62 \pm 1.02	0.001
2. When an event is reported, it seems like the person is being written up instead of the problem.	2	2.53 \pm 0.99	4	3.05 \pm 1.00	0.001
3. Patient safety is never sacrificed to get more work done.	4	3.29 \pm 1.02	2	2.92 \pm 1.16	0.04
4. Staff worry that mistakes they make are kept in personnel files.	2	2.91 \pm 0.98	4	3.60 \pm 0.72	<0.0001
5. We work in "crisis mode" trying to do too much too quickly.	2	2.83 \pm 1.07	4	3.19 \pm 1.04	0.04
6. We are actively doing things to improve safety.	4	4.28 \pm 0.79	4	3.81 \pm 0.84	0.0005
7. Staff believes their mistakes are held against them.	2	2.78 \pm 1.00	3	3.39 \pm 0.83	<0.0001
8. I believe that peer review is important for quality improvement.	4	4.04 \pm 0.74	4	3.73 \pm 0.87	0.02
9. People support one another in this department.	4	3.99 \pm 0.89	4	3.69 \pm 1.06	0.05
10. I believe that my peers are able to judge the quality of care that I provide.	4	3.72 \pm 0.79	4	3.45 \pm 1.01	0.06
11. Peer reviews should be anonymous (the reviewers identity should remain confidential).	4	3.71 \pm 0.98	4	4.00 \pm 1.01	0.07
12. I believe that the work done in my departments peer review committee leads to or will lead to important changes and improvements.	4	3.76 \pm 0.81	3	3.5 \pm 0.94	0.06

5= Strongly Agree, 4= Agree, 3= Neither Agree or Disagree, 2= Disagree, 1= Strongly Disagree; SD= Standard Deviation

*Only statistically significant results and trends are shown here. However all results are reported in Appendices 2-4

Furthermore, since SLEH pharmacists believed, more so than TSHP pharmacists, that when an event is reported it seems like the person is being written up instead of the problem ($p=0.001$), it stands to reason that they would also worry that mistakes are kept in personnel files

($p < 0.0001$) more so than comparison group. While the TSHP group disagreed that staff believe their mistakes are held against them, the SLEH group was undecided but tended to agree ($p < 0.0001$). There was agreement (albeit different intensities of agreement) between the

Table 4: Additional Perspectives towards Peer Review

Survey Questions	TSHP [n=139; (%)]	SLEH [n=52; (%)]	p-value
In the past 12 months how many event reports have you submitted?	(n=137)		
No event reports	36 (26.1)	24 (46.1)	0.001
1 to 2 event reports	28 (20.3)	14 (26.9)	0.34
3 to 5 event reports	31 (22.5)	8 (15.4)	0.32
6 to 10 event reports	23 (16.7)	4 (7.7)	0.16
11 to 20 event reports	11 (8.0)	1 (1.9)	0.19
21 or more event reports	8 (5.8)	1 (1.9)	0.45
The pharmacy department utilizes peer review to encourage a culture of safety.	(n=138)		
Yes	71 (51.4)	38 (73.1)	
No	67 (48.6)	14 (26.9)	0.008
What is the relationship between pharmacy peer review and the department's quality improvement process?	(n= 69)	(n= 37)	
Strongly connected	18 (25.4)	12 (32.4)	0.51
Moderately connected	32 (45.1)	16 (43.2)	0.84
Slightly connected	17 (23.9)	8 (21.6)	0.81
Not connected at all	2 (2.8)	1 (2.7)	1.0
In your opinion which of these do you associate with punitive action? (Multiple Selections Permitted)	(n=129)	(n=50)	
Email notification with evidence of error attached (ex: PSN report)	25 (19.4)	16 (32)	0.08
Face-to-face meeting with management	40 (31.0)	24 (48)	0.04
Documentation of the incident in an employee's permanent record	114 (88.4)	44 (88)	0.83
Discussing the error with members of a peer review committee for guidance on how the error can be avoided in the future	16 (12.4)	6 (12)	1.0
What method should be used to make employees aware of their errors? (Multiple Selections Permitted)	(n=135)	(n=50)	
Email notification with evidence of error attached (ex: PSN report)	74 (54.8)	31 (62)	0.41
Face-to-face meeting with management	91 (67.4)	29 (58)	0.30
Documentation of the incident in an employee's permanent record	19 (14.1)	2 (4)	0.07
Discussing the error with members of a peer review committee for guidance on how the error can be avoided in the future	107 (79.3)	31 (62)	0.02
Does your response to the previous question change if the error reaches a patient?	(n=136)	(n=50)	
Yes	32 (23.5)	17 (34)	0.19
Maybe	33 (24.3)	14 (28)	0.70
No	71 (52.2)	19 (38)	0.10

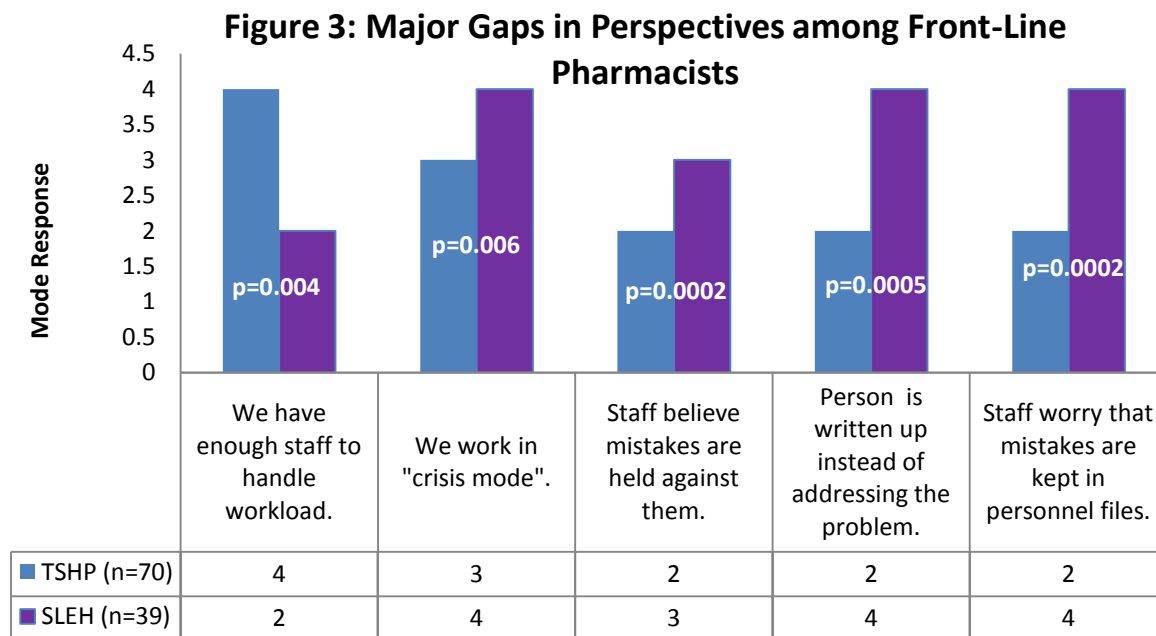
groups with regards to perspectives related to efforts to improve safety and the importance of peer review (questions 6 and 8 through 11).

Additionally, there was a statistically significant difference between groups in the frequency of safety event reports submitted (Table 4). There was a greater percentage (46.1%; n=52 compared to 26.1%; n=137) of SLEH pharmacist that indicated having submitted no event reports within the past 12 months in comparison to TSHP pharmacists ($p=0.001$). Notably, of the individuals that agreed staff worry about mistakes being kept in personnel files, 40% (n=30) indicated having submitted no event reports in the past year. Despite this, a greater percentage (73.1%; n= 52 compared to 51.4%; n=138) of SLEH pharmacists agreed that peer review was used as a means to encouraging a culture of safety compared to TSHP pharmacists ($p=0.008$) and in both groups, the majority of respondents (SLEH 43%; n=37 and TSHP 45%; n=69) believed that there is a moderate connection between pharmacy peer review and their department's quality improvement process. In both groups, the majority of respondents (~ 88%) indicated documentation of errors in an employee's permanent record to be the method of communication most associated with punitive action. However, in the SLEH group more pharmacist's associated face-to-face meetings with management with punitive action more so than did TSHP pharmacists ($p=0.04$). In contrast, discussing the error with members of a peer review committee was deemed the least punitive and was selected by both groups (SLEH 62%; n=50 and TSHP 79.3%; n=135) as the preferred method of making employees aware of their errors although there was less agreement among SLEH pharmacists ($p=0.02$). The majority of respondents in both groups (SLEH 38%; n=50 and TSHP 52%; n=136) indicated that their

preferred method of communication would not change in the event that an error reaches a patient.

In comparing TSHP pharmacists from institutions similar to SLEH (filtered by practice setting, bed size, type of organization, management of pharmacy services, full or part-time medication safety personnel, and accredited residency training program) notable differences in perspective that were not evident from the overall analysis are related to management involvement in the peer review process (data reported in Appendix 2). In particular, while TSHP pharmacists were primarily undecided with a tendency to agree that peer review should be the responsibility of management, there was a tendency for disagreement in the SLEH group ($p=0.06$). Furthermore, in the initial analysis, TSHP pharmacists disagreed that staff worry about mistakes being kept in personnel files. However, in the sub-analysis per hospital similarity there was a tendency towards agreement in both groups ($p=0.09$). Interestingly, in this analysis more TSHP pharmacists (43.4%; $n=23$ compared to SLEH 8.7%; $n=50$) preferred communicating errors by documentation in an employees' permanent record than SLEH pharmacist ($p=0.0001$).

Finally, in comparing perspectives of front line clinicians (filtered by staff position and including staff pharmacists, clinical specialists, and clinical coordinators) notable gaps in perception were related to punitive action. Specifically, while TSHP pharmacists disagreed that staff believe mistakes are held against them, that the person rather than the mistake is being written up, and that staff worry about mistakes being kept in personnel files, SLEH pharmacists tended to agree (Figure 3). Similar trends were observed with regards to perspectives related to the lack of staffing provisions and working in "crisis mode."



DISCUSSION

Peer review is a quality improvement tool that has recently been implemented within the Department of Pharmacy at SLEH. Some of the stimulus that lead to the implementation of peer review procedures includes a heightened level of safety culture awareness within the institution and the desire to ensure high quality pharmacy services. At SLEH peer review is used to periodically analyze standards of quality, identify standards that are not being met, and improve tracking of departmental performance measures. The gaps in pharmacists' perspectives identified in this study should be considered as opportunities to improve the safety culture within the department and therefore the quality of services provided by Pharmacy.

In particular, one of the main gaps identified in this study and that was reflected in both sub-analyses was concerns about punitive action in response to errors. This seems to be a bigger

concern among SLEH pharmacists than TSHP pharmacists and could account for disparities in error reporting that were also uncovered in this study. This gap may suggest a need for discussions about safety culture and non-punitive methods to enhance safety within the department. Since Just Culture and non-punitive error reporting serve as the foundation of the peer review process at SLEH these discussions may serve to help dispel misconceptions or negative perceptions towards peer review. Furthermore, another perspective expressed by SLEH pharmacists which was also reflected in both sub-analyses was the belief that there is inadequate staffing to handle workloads and that “pharmacists work in crisis mode” trying to get too many things done too quickly. These views, which were not shared by TSHP pharmacists, are likely best attributed to the many changes currently being made within the department. These changes consist of staff education for new pharmacy consult services which are part of the new clinical pharmacy practice model at SLEH, as well as training required for successful transition to an integrated electronic health record. As the department and organization as a whole move forward to complete changes designed to enhance patient care, a notable burden to maintain and/or increase productivity has been placed on all front-line staff including clinical pharmacists. The result of an increased workload burden is noted in the perspectives reported in this study.

There were a number of statements related to peer review that elicited undecided responses from SLEH pharmacists in all analyses that were conducted. Specifically, when asked to agree or disagree that the work done in peer review committee leads to or will lead to important changes and improvements or contrarily that peer review is ineffective, SLEH pharmacists

neither agreed nor disagreed. This lack of decision may indicate a lack of awareness of process improvements that have come as a result of peer review deliberations.

Recommendations for Improvements

As a result of this study the following are recommendations that should be implemented as a means of addressing negative perceptions towards peer review that could ultimately lead to disengagement of pharmacy personnel from quality and safety improvement initiatives. Firstly, to correct misconceptions related to punitive actions in response to error reports, efforts should be made to engage clinical pharmacists in discussions about Just Culture to draw the connection between Just Culture principles and how they are incorporated in peer review proceedings. Secondly, in order to create a more transparent peer review process, a rotating member schedule should be developed to allow for more front-line staff involvement in peer review proceedings. An ideal rotation scheme is one that would allow for the introduction of a few new members as well as the retention of some seasoned members such that the integrity and procedural rules of peer review are maintained. Thus, education should be used as the initial means of correcting negative perspectives. This should allow more pharmacists to gain insight and clearer perspectives which in turn should serve to engage more individuals in departmental efforts to make improvements. Additionally, efforts should be made to disseminate information related to any and all process improvements that result from peer review proceedings. For instance, many improvements to the current warfarin monitoring program at SLEH were the direct result of pharmacy peer review. However, the level of awareness among pharmacy personnel varies greatly. In order to combat undecided or

indifferent perspectives related to the potential to make improvements through peer review, system and process changes should be shared throughout the department. Viable mechanisms of communicating these changes include postings on the pharmacy Pillar Board located in Central Pharmacy, email updates, the departmental newsletter, daily huddles, team meetings, and Pharmacy Rounds. Lastly, given that SLEH pharmacists identified “email notification” and “discussion with a member of peer review” as the preferred methods of communicating error, efforts should be made to incorporate these practices.

Some of the results, especially with regards to gaps related to the potential of peer review to bring about positive changes, could also be attributed to the newness of the pharmacy peer review program at SLEH. The program officially began in May 2012 and is consequently still in its infancy. Therefore in order to ensure its success, the recommendations provided here should be applied over the course of the next year and a subsequent assessment should be conducted in order to determine whether barriers in perspective persist and identify strategies to better address them.

LIMITATIONS

Sixteen surveys from the TSHP group and 4 surveys from the SLEH group were excluded from analysis due to incomplete or partial response. While exclusions were done to maintain integrity of data, this could have introduced bias to the survey however, attempts were made to minimize this by only excluding responses that failed to address the safety culture and peer review questions. Additionally, given that there only was a 20% response rate obtained for the TSHP group the true perspectives of this group may not have fully been captured in this study.

Also, the relatively lengthy nature of this survey could have discouraged more participation in both groups. Lastly, results are based on univariate analyses therefore confounding was not taken into account.

CONCLUSIONS

Peer review deliberations are confidential and protected and should thereby enhance participation in the review process. Peer review provides a useful quality improvement tool that can facilitate improvements in clinical processes or procedures. However, in order to ensure a successful pharmacy peer review program, negative perceptions that could serve as barriers to this quality improvement method should be identified and addressed.

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APPENDIX 1: Pharmacists' Perceptions towards Peer Review Questionnaire*

Demographic Questions

1. Select the category that best describes the number of inpatient beds licensed for use in your hospital.
 - ☐ Fewer than 100 beds
 - ☐ 100 to 299 beds
 - ☐ 300 to 499 beds
 - ☐ 500 beds and over
 - ☐ N/A
2. Select the one category that best describes the type of organization for your hospital.
 - ☐ State or local government
 - ☐ Non-government, not-for-profit
 - ☐ Investor-owned, for profit
 - ☐ Military
 - ☐ Veterans Affairs
 - ☐ US Public Health Service
 - ☐ Other: _____
3. Select the category that best describes the type of service that your hospital provides to the majority of its admissions.
 - ☐ General medicine and surgical
 - ☐ Long Term Acute Care (LTAC)
 - ☐ Specialty: Cardiology
 - ☐ Specialty: Oncology
 - ☐ Specialty: Orthopedic
 - ☐ Specialty: Pediatric
 - ☐ Specialty: Psychiatric
 - ☐ Specialty: Rehabilitation
 - ☐ Specialty: Women and Children
 - ☐ Other: _____
4. Does your hospital have a pharmacy residency-training program that has been accredited or is pending accreditation by the American Society of Health-System Pharmacists?
 - ☐ Yes
 - ☐ No
5. How many pharmacy residents are anticipated for the residency training program during 2012-2013?
 - ☐ 1-2
 - ☐ 3-5
 - ☐ Greater than 5

6. Does your organization employ a full-time or part-time medication safety officer/manager?
- ☐ Yes
- ☐ No
7. How are pharmacy services managed in your organization?
- ☐ Internally
- ☐ Externally (Outsourced)
8. What is your staff position in your department? Select the answer that best describes your position.
- ☐ Staff Pharmacist
- ☐ Informatics Pharmacist
- ☐ Clinical Specialist
- ☐ Medication Safety Officer
- ☐ Pharmacy Manager
- ☐ Other: _____
9. How long have you worked in your hospital's pharmacy department?
- ☐ Less than a year
- ☐ 1 to 5 years
- ☐ 6 to 10 years
- ☐ 11 to 15 years
- ☐ 16 to 20 years
- ☐ 21 or more years
10. In your position, do you typically have direct interaction or contact with patients?
- ☐ Yes
- ☐ No

Safety Culture Questions

Indicate your agreement or disagreement with the following statements.

Strongly Disagree <input type="checkbox"/> 1	Disagree <input type="checkbox"/> 2	Neither <input type="checkbox"/> 3	Agree <input type="checkbox"/> 4	Strongly Agree <input type="checkbox"/> 5
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11. Non-punitive error reporting is encouraged at this hospital.
12. People support one another in this department.
13. We have enough staff to handle the workload.
14. Pharmacists work longer hours than is best for patient care.
15. We are actively doing things to improve safety.
16. Staff believes their mistakes are held against them.
17. Mistakes lead to positive changes here.

18. When an event is reported, it seems like the person is being written up instead of the problem.
19. Patient safety is never sacrificed to get more work done.
20. Staff worry that mistakes they make are kept in personnel files.
21. We have patient safety problems in this hospital.
22. Our procedures and systems are good at preventing errors.
23. We work in "crisis mode" trying to do too much too quickly.

Peer Review Questions

Indicate your agreement or disagreement with the following statements.

Strongly Disagree <input type="checkbox"/> 1	Disagree <input type="checkbox"/> 2	Neither <input type="checkbox"/> 3	Agree <input type="checkbox"/> 4	Strongly Agree <input type="checkbox"/> 5
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24. I believe that my peers are able to judge the quality of care that I provide.
25. I believe that peer review is important for quality improvement.
26. Peer reviews should be the responsibility of management to implement not peers.
27. Peer review reports should be shared with upper management.
28. I would provide my peers with honest and constructive feedback about their cases since the process is "protected".
29. Peer reviews should be anonymous (the reviewers identity should remain confidential).
30. I would be willing to participate in a peer review process.
31. I believe that the work done in my departments peer review committee leads to or will lead to important changes and improvements.
32. I believe that the peer review committee in my department is ineffective.
33. I would make changes to the way I practice after receiving feedback from the peer review committee about my performance.
34. In the past 12 months how many event reports have you filled out and submitted?
 - ☐ No event reports
 - ☐ 1 to 2 event reports
 - ☐ 3 to 5 event reports
 - ☐ 6 to 10 event reports
 - ☐ 11 to 20 event reports
 - ☐ 21 or more event reports

35. The pharmacy department utilizes peer review to encourage a culture of safety.
- ☐ Yes
 - ☐ No
36. What is the relationship between pharmacy peer review and the department's quality improvement process?
- ☐ Strongly connected
 - ☐ Moderately connected
 - ☐ Slightly connected
 - ☐ Not connected at all
37. In your opinion which of these do you associate with punitive action? (Check all that apply)
- ☐ Email notification with evidence of error attached (ex: PSN report)
 - ☐ Face-to-face meeting with management
 - ☐ Documentation of the incident in an employee's permanent record
 - ☐ Discussing the error with members of a peer review committee for guidance on how the error can be avoided in the future
38. What method should be used to make employees aware of their errors? (Check all that apply)
- ☐ Email notification with evidence of error attached (ex: PSN report)
 - ☐ Face-to-face meeting with management
 - ☐ Documentation of the incident in an employee's permanent record
 - ☐ Discussing the error with members of a peer review committee for guidance on how the error can be avoided in the future
 - ☐ Other: _____
39. Does your response to the previous question change if the error reaches a patient?
- ☐ Yes
 - ☐ No
 - ☐ Maybe

*The numbering sequence of survey items shown here may differ from the numbering sequence generated on the electronic survey.

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APPENDIX 2: Overall Survey Results

5= Strongly Agree, 4= Agree, 3= Neither Agree or Disagree, 2= Disagree, 1= Strongly Disagree; SD= Standard Deviation

Table 5: Pharmacists' Perspective towards Safety Culture

Table 5: Pharmacists' Perspective towards Safety Culture				Response [median, mode, mean ± SD]			
Survey Questions	TSHP (n=139)			SLEH (n=52)			p-value
Non-punitive error reporting is encouraged at this hospital.	4	5	4.24± 0.85	4	4	4.01± 0.90	0.11
People support one another in this department.	4	4	3.99± 0.89	4	4	3.69± 1.06	0.05
We have enough staff to handle the workload.	3	4	3.18± 1.02	2	2	2.62± 1.02	0.001
Pharmacists work longer hours than is best for patient care.	2	2	2.63± 0.92	2	2	2.63± 1.05	0.96
We are actively doing things to improve safety.	4	4	4.28± 0.79	4	4	3.81± 0.84	0.0005
Staff believes their mistakes are held against them.	3	2	2.78± 1.00	3	3	3.39± 0.83	0.0001
Mistakes lead to positive changes here.	4	4	3.70± 0.80	4	4	3.63± 0.79	0.63
When an event is reported, it seems like the person is being written up instead of the problem.	2	2	2.53± 0.99	3	4	3.05± 1.00	0.001
Patient safety is never sacrificed to get more work done.	3	4	3.29± 1.02	3	2	2.92± 1.16	0.04
Staff worry that mistakes they make are kept in personnel files.	3	2	2.91± 0.98	4	4	3.60± 0.72	<.0001
We have patient safety problems in this hospital.	3	3	2.99± 0.98	3	3	3.06± 0.92	0.64
Our procedures and systems are good at preventing errors.	4	4	3.47± 0.84	3.5	4	3.35± 0.86	0.38
We work in “crisis mode” trying to do too much too quickly.	3	2	2.83± 1.07	3	4	3.19± 1.04	0.04

Table 6: Pharmacists' Perspective towards Peer Review

Table 6: Pharmacists' Perspective towards Peer Review			Response [median, mode, mean ± SD]				
Survey Questions	TSHP (n=139)			SLEH (n=52)			p-value
I believe that my peers are able to judge the quality of care that I provide.	4	4	3.72± 0.79	4	4	3.45± 1.01	0.06
I believe that peer review is important for quality improvement.	4	4	4.04± 0.74	4	4	3.73± 0.87	0.02
Peer reviews should be the responsibility of management to implement not peers.	3	4	3.12± 1.04	3	3	2.88± 0.86	0.14
Peer review reports should be shared with upper management.	4	4	3.46± 0.87	4	4	3.47± 0.83	0.92
I would provide my peers with honest and constructive feedback about their cases since the process is “protected”.	4	4	4.00± 0.62	4	4	4.14± 0.61	0.13
Peer reviews should be anonymous (the reviewers identity should remain confidential).	4	4	3.71± 0.98	4	4	4.00± 1.01	0.07
I would be willing to participate in a peer review process.	4	4	4.09± 0.66	4	4	3.86± 1.08	0.08
I believe that the work done in my departments peer review committee leads to or will lead to important changes and improvements.	4	4	3.76± 0.81	3	3	3.5± 0.94	0.06
I believe that the peer review committee in my department is ineffective.	3	3	2.85± 0.79	3	3	2.88± 0.92	0.79
I would make changes to the way I practice after receiving feedback from the peer review committee about my performance.	4	4	4.01± 0.60	4	4	4.10± 0.70	0.42

Table 7: Additional Perspectives towards Peer Review

Survey Questions	TSHP [n=139; (%)]	SLEH [n=52; (%)]	p-value
In the past 12 months how many event reports have you filled out and submitted?	(n=137)		
No event reports	36 (26.1)	24 (46.1)	0.001
1 to 2 event reports	28 (20.3)	14 (26.9)	0.34
3 to 5 event reports	31 (22.5)	8 (15.4)	0.32
6 to 10 event reports	23 (16.7)	4 (7.7)	0.16
11 to 20 event reports	11 (8.0)	1 (1.9)	0.19
21 or more event reports	8 (5.8)	1 (1.9)	0.45
The pharmacy department utilizes peer review to encourage a culture of safety.	(n=138)		
Yes	71 (51.4)	38 (73.1)	0.008
No	67 (48.6)	14 (26.9)	
What is the relationship between pharmacy peer review and the department's quality improvement process?	(n= 69)	(n= 37)	
Strongly connected	18 (25.4)	12 (32.4)	0.51
Moderately connected	32 (45.1)	16 (43.2)	0.84
Slightly connected	17 (23.9)	8 (21.6)	0.81
Not connected at all	2 (2.8)	1 (2.7)	1.0
In your opinion which of these do you associate with punitive action? (Multiple Selections Permitted)	(n=129)	(n=50)	
Email notification with evidence of error attached (ex: PSN report)	25 (19.4)	16 (32)	0.08
Face-to-face meeting with management	40 (31.0)	24 (48)	0.04
Documentation of the incident in an employee's permanent record	114 (88.4)	44 (88)	0.83
Discussing the error with members of a peer review committee for guidance on how the error can be avoided in the future	16 (12.4)	6 (12)	1.0
What method should be used to make employees aware of their errors? (Multiple Selections Permitted)	(n=135)	(n=50)	
Email notification with evidence of error attached (ex: PSN report)	74 (54.8)	31 (62)	0.41
Face-to-face meeting with management	91 (67.4)	29 (58)	0.30
Documentation of the incident in an employee's permanent record	19 (14.1)	2 (4)	0.07
Discussing the error with members of a peer review committee for guidance on how the error can be avoided in the future	107 (79.3)	31 (62)	0.02
Does your response to the previous question change if the error reaches a patient?	(n=136)	(n=50)	
Yes	32 (23.5)	17 (34)	0.19
Maybe	33 (24.3)	14 (28)	0.70
No	71 (52.2)	19 (38)	0.10

APPENDIX 3: Sub-analysis of Data with respect to Hospital Demographics

5= Strongly Agree, 4= Agree, 3= Neither Agree or Disagree, 2= Disagree, 1= Strongly Disagree; SD= Standard Deviation

Table 8: Pharmacists' Perspective towards Safety Culture
(Sub-Analysis per Hospital Demographics)

Survey Questions	Response [median, mode, mean \pm SD]						
	TSHP n=23			SLEH n=52			p-value
Non-punitive error reporting is encouraged at this hospital.	4.5	5	4.5 \pm 0.60	4	4	4.01 \pm 0.90	0.05
People support one another in this department.	4	4	4.2 \pm 0.60	4	4	3.69 \pm 1.06	0.05
We have enough staff to handle the workload.	4	4	3.2 \pm 1.01	2	2	2.62 \pm 1.02	0.04
Pharmacists work longer hours than is best for patient care.	3	2	2.8 \pm 0.97	2	2	2.63 \pm 1.05	0.67
We are actively doing things to improve safety.	5	5	4.6 \pm 0.50	4	4	3.81 \pm 0.84	0.0001
Staff believes their mistakes are held against them.	3	2	2.8 \pm 0.83	3	3	3.39 \pm 0.83	0.009
Mistakes lead to positive changes here.	4	4	3.9 \pm 0.69	4	4	3.63 \pm 0.79	0.12
When an event is reported, it seems like the person is being written up instead of the problem.	2	2	2.3 \pm 0.80	3	4	3.05 \pm 1.00	0.003
Patient safety is never sacrificed to get more work done.	4	4	3.5 \pm 0.95	3	2	2.92 \pm 1.16	0.05
Staff worry that mistakes they make are kept in personnel files.	3	4	3.3 \pm 0.85	4	4	3.60 \pm 0.72	0.09
We have patient safety problems in this hospital.	3	4	3.2 \pm 0.93	3	3	3.06 \pm 0.92	0.70
Our procedures and systems are good at preventing errors.	4	4	3.7 \pm 0.60	3.5	4	3.35 \pm 0.86	0.15
We work in "crisis mode" trying to do too much too quickly.	3	2	2.8 \pm 1.18	3	4	3.19 \pm 1.04	0.17

Table 9: Pharmacists' Perspective towards Peer Review
(Sub-Analysis per Hospital Demographics)

Survey Questions	Response [median, mode, mean \pm SD]						
	TSHP n=23			SLEH n=52			p-value
I believe that my peers are able to judge the quality of care that I provide.	4	4	3.8 \pm 0.64	4	4	3.45 \pm 1.01	0.22
I believe that peer review is important for quality improvement.	4	4	4.3 \pm 0.64	4	4	3.73 \pm 0.87	0.02
Peer reviews should be the responsibility of management to implement not peers.	3	4	3.4 \pm 1.04	3	3	2.88 \pm 0.86	0.06
Peer review reports should be shared with upper management.	4	4	3.6 \pm 0.99	4	4	3.47 \pm 0.83	0.58
I would provide my peers with honest and constructive feedback about their cases since the process is "protected".	4	4	4.0 \pm 0.69	4	4	4.14 \pm 0.61	0.26
Peer reviews should be anonymous (the reviewers identity should remain confidential).	4	4	3.5 \pm 1.05	4	4	4.00 \pm 1.01	0.07
I would be willing to participate in a peer review process.	4	4	4.3 \pm 0.44	4	4	3.86 \pm 1.08	0.13
I believe that the work done in my departments peer review committee leads to or will lead to important changes and improvements.	4	5	4.2 \pm 0.77	3	3	3.5 \pm 0.94	0.004
I believe that the peer review committee in my department is ineffective.	3	3	2.8 \pm 1.18	3	3	2.88 \pm 0.92	0.88
I would make changes to the way I practice after receiving feedback from the peer review committee about my performance.	4	4	4.05 \pm 0.60	4	4	4.10 \pm 0.70	0.79

Table 10: Additional Perspectives towards Peer Review (Sub-Analysis per Hospital Demographics)			
Survey Question	TSHP [n=23; (%)]	SLEH [n=52; (%)]	p- value
In the past 12 months how many event reports have you filled out and submitted?	(n=21)		
No event reports	3 (13.0)	24 (46.1)	0.02
1 to 2 event reports	8 (34.8)	14 (26.9)	0.40
3 to 5 event reports	3 (13.0)	8 (15.4)	1.0
6 to 10 event reports	6 (26)	4 (7.7)	0.03
11 to 20 event reports	1(4.3)	1 (1.9)	0.50
21 or more event reports	0	1 (1.9)	1.0
The pharmacy department utilizes peer review to encourage a culture of safety.	(n=22)		
Yes	15 (68.2)	38 (73.1)	0.78
No	7 (31.8)	14 (26.9)	
What is the relationship between pharmacy peer review and the department's quality improvement process?	(n= 13)	(n= 37)	
Strongly connected	7 (53.8)	12 (32.4)	1.0
Moderately connected	5 (71.4)	16 (43.2)	0.10
Slightly connected	1 (14.3)	8 (21.6)	0.14
Not connected at all	0	1 (2.7)	1.0
In your opinion which of these do you associate with punitive action? (Multiple Selections Permitted)	(n=23)	(n=50)	
Email notification with evidence of error attached (ex: PSN report)	6 (26)	16 (32)	0.78
Face-to-face meeting with management	11 (47.8)	24 (48)	1.0
Documentation of the incident in an employee's permanent record	19 (82.6)	44 (88)	0.72
Discussing the error with members of a peer review committee for guidance on how the error can be avoided in the future	6 (26.1)	6 (12)	0.18
What method should be used to make employees aware of their errors? (Multiple Selections Permitted)	(n=23)	(n=50)	
Email notification with evidence of error attached (ex: PSN report)	16 (69.6)	31 (62)	0.61
Face-to-face meeting with management	17 (73.9)	29 (58)	0.30
Documentation of the incident in an employee's permanent record	10 (43.4)	2 (8.7)	0.0001
Discussing the error with members of a peer review committee for guidance on how the error can be avoided in the future	22 (95.6)	31 (62)	0.002
Does your response to question 15 change if the error reaches a patient?	(n=22)	(n=50)	
Yes	4 (18.1)	17 (34)	0.26
Maybe	4 (18.1)	14 (28)	0.56
No	14 (63.6)	19 (38)	0.07

APPENDIX 4: Sub-analysis of Data with respect to Clinical Pharmacist Staff

5= Strongly Agree, 4= Agree, 3= Neither Agree or Disagree, 2= Disagree, 1= Strongly Disagree; SD= Standard Deviation

Table 12: Pharmacists' Perspective towards Safety Culture
(Sub-Analysis per Clinical Pharmacist)

Survey Questions	Response [median, mode, mean ± SD]						
	TSHP (n=70)			SLEH (n=52)			p-value
Non-punitive error reporting is encouraged at this hospital.	4	5	4.29± 0.85	4	4	3.84± 0.95	0.014
People support one another in this department.	4	4	3.8± 0.99	4	4	3.60± 1.02	0.34
We have enough staff to handle the workload.	3.5	4	3.17± 0.92	2	2	2.56± 0.99	0.004
Pharmacists work longer hours than is best for patient care.	3	2	2.73± 0.92	2	2	2.57± 0.98	0.43
We are actively doing things to improve safety.	4	4	4.13± 0.95	4	4	3.82± 0.73	0.08
Staff believes their mistakes are held against them.	2	2	2.69± 1.02	3	3	3.43± 0.80	0.0002
Mistakes lead to positive changes here.	4	4	3.61± 0.79	4	4	3.66± 0.63	0.77
When an event is reported, it seems like the person is being written up instead of the problem.	2	2	2.5± 0.91	3	4	3.18± 1.01	0.0005
Patient safety is never sacrificed to get more work done.	3	3	3.11± 1.08	3	2	2.95± 1.05	0.44
Staff worry that mistakes they make are kept in personnel files.	3	2	2.9± 1.01	4	4	3.63± 0.75	0.0002
We have patient safety problems in this hospital.	3	3	3.04± 0.97	3	3	3.03± 0.82	0.61
Our procedures and systems are good at preventing errors.	4	4	3.28± 0.81	3.5	4	3.39± 0.82	0.69
We work in "crisis mode" trying to do too much too quickly.	3	3	2.81± 1.05	3.5	4	3.39± 0.94	0.006

Table 13: Pharmacists' Perspective towards Peer Review (Sub-Analysis per Clinical Pharmacist)

Survey Questions	Response [median, mode, mean ± SD]						
	TSHP (n=70)			SLEH (n=52)			p-value
I believe that my peers are able to judge the quality of care that I provide.	4	4	3.64± 0.95	4	4	3.45± 1.07	0.24
I believe that peer review is important for quality improvement.	4	4	4.0± 0.80	4	4	3.62± 0.76	0.02
Peer reviews should be the responsibility of management to implement not peers.	3	3	3.2± 0.97	3	3	3.02± 0.72	0.34
Peer review reports should be shared with upper management.	4	4	3.5± 0.78	4	4	3.46± 0.78	0.80
I would provide my peers with honest and constructive feedback about their cases since the process is "protected".	4	4	3.91± 0.64	4	5	3.92± 1.00	0.07
Peer reviews should be anonymous (the reviewers identity should remain confidential).	4	4	3.77± 0.92	4	4	3.84± 1.04	0.43
I would be willing to participate in a peer review process.	4	4	4.0± 0.72	4	4	3.86± 1.08	0.35
I believe that the work done in my departments peer review committee leads to or will lead to important changes and improvements.	4	4	3.6± 0.78	3	3	3.32± 0.87	0.09
I believe that the peer review committee in my department is ineffective.	3	3	2.94± 0.72	3	3	3.0± 0.81	0.71
I would make changes to the way I practice after receiving feedback from the peer review committee about my performance.	4	4	4.0± 0.68	4	4	4.02± 0.69	0.85

Table 14: Additional Perspectives towards Peer Review (Sub-Analysis per Clinical Pharmacists)			
Question	TSHP [n=70; (%)]	SLEH [n=39; (%)]	p- value
In the past 12 months how many event reports have you filled out and submitted?		(n=38)	
No event reports	21 (31)	20 (52.6)	0.02
1 to 2 event reports	12 (16.9)	10 (26.3)	0.002
3 to 5 event reports	19 (26.8)	6 (15.8)	0.24
6 to 10 event reports	8 (11.3)	2 (5.3)	0.49
11 to 20 event reports	7(9.9)	0	0.94
21 or more event reports	3 (4.2)	1 (2.6)	1.0
The pharmacy department utilizes peer review to encourage a culture of safety.	(n=70)	(n=38)	
Yes	37 (54.2)	26 (68.4)	0.15
No	33 (45.8)	12 (31.6)	
What is the relationship between pharmacy peer review and the department's quality improvement process?	(n= 35)	(n= 26)	
Strongly connected	8 (18.2)	6 (23.1)	1.0
Moderately connected	20 (52.3)	12 (46.2)	0.44
Slightly connected	6 (13.6)	7 (26.9)	0.53
Not connected at all	1(22.7)	1 (3.8)	1.0
In your opinion which of these do you associate with punitive action? (Multiple Selections Permitted)	(n=70)	(n=39)	
Email notification with evidence of error attached (ex: PSN report)	16 (22.9)	16 (41)	0.05
Face-to-face meeting with management	24 (34.3)	21 (53.8)	0.07
Documentation of the incident in an employee's permanent record	60 (85.7)	35 (89.7)	0.77
Discussing the error with members of a peer review committee for guidance on how the error can be avoided in the future	13 (18.9)	6 (15.4)	0.80
What method should be used to make employees aware of their errors? (Multiple Selections Permitted)	(n=70)	(n=39)	
Email notification with evidence of error attached (ex: PSN report)	42 (69.6)	25 (64.1)	0.84
Face-to-face meeting with management	43 (73.9)	21 (53.8)	0.54
Documentation of the incident in an employee's permanent record	9 (43.4)	2 (5.1)	0.32
Discussing the error with members of a peer review committee for guidance on how the error can be avoided in the future	56 (95.6)	22 (56.4)	0.14
Does your response to question 15 change if the error reaches a patient?	(n=67)	(n=39)	
Yes	19 (28.4)	17 (43.6)	0.14
Maybe	20 (29.9)	14 (35.9)	0.53
No	28 (41.8)	19 (48.7)	0.55