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## Evaluation of a Patient Perspective Module in a Required Medication Safety and Quality Course at a College of Pharmacy

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**Key Words:** Medication Safety, Patient Centeredness, Pharmacy Education

### Abstract

**Objectives:** To develop and evaluate the impact of a module discussing the patient's perspective on medication errors in a required medication safety course at a college of pharmacy. **Methods:** Students were required to read *Josie's Story*, a true story written by a mother after her daughter died from a medical error, and attend an in-class discussion regarding the book. A questionnaire, which employed a pre-post retrospective method and extracted items from the Caring Ability Inventory, was then administered to measure the change in students' perceptions of patient care. Additional questions gathered students' perceptions of the assignment, their personal experiences with the topic, and the importance of medication safety. **Results:** 120 out of 138 students (response rate = 87%) completed the questionnaire. 56% of students indicated they would be more likely to speak with a patient directly about a medication error after reading the book, whereas only 3% were less likely, and 42% indicated they were just as likely. Most students (59%) reported that they felt more motivated to learn about medication safety after reading *Josie's Story*. **Implications:** This course previously addressed strategies to prevent medication errors. Successfully adding a component that introduces how a medication error impacted a patient and her family may help motivate students to recognize the importance and need for a culture of safety, personalize how medication errors impact patients, and provide a venue for students to gain patient centeredness and caring skills.

### Introduction

Approximately 98,000 people die each year in US hospitals from preventable medical errors, and these errors cost \$30 billion in lost income and increased health expenditures.<sup>1</sup> As a result, The Institute of Medicine (IOM) released a report "Health Professions Education: A Bridge to Quality", which indicated a concern that many branches of new healthcare professionals, including pharmacists, may not be sufficiently trained to provide safe medical care. The report calls on educators to ensure that students develop and maintain proficiency in five core areas: delivering patient-centered care, working as part of a team, practicing evidenced-based medicine, focusing on quality improvement, and using information technology.<sup>2</sup>

The Accreditation Council for Pharmacy Education (ACPE), heeding the call from the IOM, has revised the accreditation standards that became effective in 2011 to provide greater emphasis on medication safety and patient outcomes. Those standards, listed in Guideline 12.1, state that graduates must be competent to provide patient-centered care and manage

medication use systems through medication safety and error reduction programs.<sup>3</sup>

"Safety and Quality in the Medication Use Process" is a required 3-credit course taught in the third professional year at the University of Wisconsin School of Pharmacy. This interdisciplinary course is also taken by upper division undergraduate and graduate students from the Department of Industrial and System Engineering interested in medication safety in healthcare. The course objectives are to provide students with the fundamentals of safe medication management, which will apply to any pharmacy practice environment or professional discipline. The course content addresses the incidence of medication errors, factors that contribute to medication errors and poor quality in health care from a systems perspective, and evidence-based methods to proactively and retrospectively decrease errors, guided by human factors engineering principles.

Feedback from former students after their fourth year rotations or after residency has been positive. Former students had been surprised by the number of requests to

focus on patient safety on clerkship projects, and the frequency in which patient safety concepts and issues were discussed in work-related meetings. Former students were often able to see first-hand how medication errors had impacted patients in their clerkship and work settings. However, feedback from current students who were in the middle of coursework was vastly different. Current students felt that they fully understood medication safety already because they perceived that medication safety primarily constituted an understanding of adverse events and side effects of drugs. In addition, these students, many with limited exposure to clinical practice, had difficulty recognizing the relevance of the topics taught, in part because a systems perspective deliberately deemphasizes the role of the health care professional and patient when analyzing medication errors.

Readings have been successfully used in pharmacy education to encourage students to explore the patients' experience. Plake developed a book club elective to facilitate development of empathy with patients' with chronic disease.<sup>4</sup> Black et al. introduced a reading experience to incoming pharmacy students and found that it enhanced the students' understanding of healthcare delivery and clinical research.<sup>5</sup> Therefore, in order to motivate students to recognize the relevance of the study of medication safety, and to add a focus on patient centeredness to the course syllabus, a new activity, which included a required reading, was incorporated at the beginning of the semester with the hopes that this added activity would personalize the impact that medication errors have on patients. This study summarizes the development and evaluation of the student responses to this new activity.

## Methods

During the beginning of the Spring 2011 academic semester, students were required to read the account of a medical error in the nonfiction book *Josie's Story*, by Sorrel King.<sup>6</sup> The book follows the life of a mother and her family after her youngest daughter dies as a result of a medical error while being treated at a nationally respected hospital for an accidental injury. This true story reveals the emotions and personal responses of this mother as she addresses her grief, issues of patient disclosure, trust in the health care team, and the founding of a lay organization to promote medication and patient safety.

After reading *Josie's Story* outside of class, students were required to take a short quiz of two open-ended questions (to assure that they had read the book) and attend an hour-long in-class discussion of the book. The discussion provided students the opportunity to debrief and openly share their

opinions and thoughts regarding the book with their peers. A brief questionnaire was offered to the entire class directly after the discussion. No personal identifying information was collected, and participation had no effect on students' grade for the course.

The 29-item questionnaire was divided into three sections: perceptions of the activity, perceptions of caring toward patients, and intended behavior when interacting with patients about a medication error. A retrospective pre-post method was used.<sup>4,7</sup> The retrospective pretest posttest method is a single questionnaire administered after an intervention to measure changes in beliefs due to the intervention. This method was selected because students who had taken the class in previous years had shared that they overestimated their knowledge and attitudes about patient safety prior to the class. This method has been shown to decrease response shift bias in which respondents report lower scores after the intervention as a result of their new ability to gauge their own knowledge and attitudes.<sup>8</sup> When students are asked to respond to a question about how much they know about a particular subject after they have some basic knowledge of the subject itself, students are more able to accurately reflect on the degree of change in knowledge and attitude.<sup>4,7</sup> The questionnaire is provided in Appendix A.

To measure perceptions of the activity, students were asked seven 5-point Likert-style questions (strongly agree to strongly disagree) about the effectiveness of the activity, such as whether the assignment helped them reflect on previous interactions with patients regarding safety and medication errors (See Appendix A). Students were also asked to describe *Josie's Story* in one word to gather their summative view of the book in their own words.

To measure perceptions of caring, seven statements were extracted from the Caring Ability Inventory and adapted to the topic of medication safety. Students rated their agreement with statements about caring "Before reading *Josie's Story*..." and "After reading *Josie's Story*." The Caring Ability Inventory measures the degree of a person's ability to care for others. It has been shown to be a valid and reliable instrument. Responses were gathered using a 5-point Likert-style scale (strongly agree to strongly disagree).

To measure intended behavior change, students were asked to rank the chronological order in which they would perform six different tasks involved in addressing a medication error both before and after the activity. These tasks were identified by the primary researchers based on steps taken after medication errors in their own clinical practice and included: alert the patient, fix and document the error,

determine who is responsible for the error, tell the patient's physician, find out how the error can be prevented in the future, and report the error to management. Because Reading *Josie's Story* was expected to highlight the impact of medication errors on patients, these questions were asked with the intent to identify the priority of importance assigned by students to alerting patients regarding a medication error. Students were also asked to describe a change they would make in the way they practiced pharmacy because of the reading assignment, and one closed-ended question regarding how likely they would be to speak with a patient directly about a medication error now as compared to before the activity.

Human subjects approval was sought, but the University of Wisconsin's Educational Investigational Review Board deemed that this project could be considered quality improvement and that approval was not necessary.

#### Data Analysis

Descriptive statistics were conducted to calculate means and frequencies from the questionnaire items. If a participant did not answer the pre- and post-reading assessment for each retrospective question their response was eliminated from the analysis. For the pre-post retrospective questions addressing perceptions of caring toward patients, a paired t-test was conducted. Open-ended questions were analyzed qualitatively.

For the question where students were asked to provide one word to describe *Josie's Story*, two researchers independently grouped words in positive, negative, and neutral categories. Words within each category were further divided into two groups: words describing the students' emotional response to the book and words describing the book's content. For the question "What is one thing that will change the way you practice pharmacy because of reading *Josie's Story*?" responses were also grouped into general categories.

#### Results

Of the 138 students enrolled in the course, 120 students completed the questionnaire yielding an 87% response rate. Of these, 5 students identified themselves as industrial engineering students (4%) and their answers were removed from the data analysis. Of those responding, 59 (51%) indicated they had previously been involved with a medication error at a pharmacy where they have worked, 77 students (67%) had spoken with a patient regarding a medication error, and 73 (63%) had either personally been affected by a medication error or knew someone who had been affected by a medication error.

#### Perceptions of the Activity

Table 1 shows the percent of participants who stated they strongly agreed or agreed with the statements measuring their opinions on the activity.

Questionnaire Statement	Agreed & Strongly Agreed (%)
Discussing and reading about real patient's stories such as <i>Josie's Story</i> should remain part of the medication safety course.	98 (87%)
Reading <i>Josie's Story</i> was an effective way for me to learn about the relevance of medication safety.	86 (76%)
I feel more motivated to learn about medication safety because of reading and discussing <i>Josie's Story</i> .	68 (60%)
I think my future pharmacy practice will be impacted by the book <i>Josie's Story</i> .	65 (58%)
Reading <i>Josie's Story</i> showed me I do not understand the importance and impact of medication safety as well as I thought I did.	58 (51%)
Reading <i>Josie's Story</i> helped me reflect on my experiences with medication errors.	48 (42%)
I already knew what I needed to know about medication safety before reading <i>Josie's Story</i> .	17 (15%)

One hundred and eleven (111) pharmacy students gave a one-word summary or description of the book (Table 2). A goal of the assignment was to invoke an empathetic response to patients that experience medical errors, and to infuse emotion into the topic of medication safety. Student respondents selected an emotional term (71%) to describe the book more often than a non-emotional term (29%). Students more often assigned a negative emotion (34%), such as "sadness", than a word with neutral emotion (12%) or positive emotion (25%), such as "intense" or "inspiring" respectively. Of students selecting a non-emotional response summary word, more selected a positive word (16%), such as "excellent", than neutral (7%) or negative (5%) words such as "educational" or "preventable".

**Table 2: Describe Josie's Story in one word (n=111)**

	Number (%)	Positive Response (%)	Neutral Response (%)	Negative Response (%)
Emotional Response	79 (71%)	28 (25%)	13 (12%)	38 (34%)
Examples		inspiring, motivating	emotional, intense	depressing, sad
Non-emotional Response	32 (29%)	18 (16%)	8 (7%)	6 (5%)
Examples		excellent, interesting	educational, relevant	blame, preventable
Total	111	46 (41%)	21 (19%)	44 (39%)

*Perceptions of Caring Toward Patients*

Statistically significant changes were found in 9 of the 12 items on the questionnaire relating to perceptions on caring, while 3 items showed no change (Table 3).

After reading *Josie's Story*, students reported increased agreement with the idea that medication errors can occur in any setting and impact patients' trust in providers ( $p<0.01$ ), the role of the patient as an active player in error prevention ( $p<0.001$ ), and in the importance of open communication between the patient and their healthcare provider ( $p<0.01$ ). Students continued to desire the trust of their patients ( $p=0.16$ ) and more students felt they were in tune with patients' emotions after the activity ( $p<0.01$ ). There was no change in students ability to understand how a patient feels if they had not had similar experiences themselves ( $p=0.22$ ) though they care about the well-being of their patients ( $p=0.04$ ). Even though the majority of students still felt afraid of discussing errors with patients ( $p=0.05$ ), they feel more comfortable with doing so ( $p<0.01$ ), and felt more strongly that they should communicate these occurrences, even if no harm occurred ( $p<0.01$ ), after completing the activity than before participating in the activity.

**Table 3: Perceptions of Caring Toward Patients (n=109)**

Question	Mean Response Before Reading Josie's Story	Mean Response After Reading Josie's Story	p value
Serious medication errors resulting in harm or death can occur in any health care setting	4.5	4.7	$<0.01^a$
A single medication error can have a significant impact on a patient's trust in their medical professionals (doctor, pharmacist, dentist, etc.)	4.5	4.6	$<0.01^a$
Patients can prevent medical errors	3.5	4.1	$<0.01^a$
Medication safety is the responsibility of the health care provider, not the patient or their family <sup>b</sup>	3.1	2.7	$<0.01^a$
Patients should be free to question the decisions of their health care provider	4.1	4.5	$<0.01^a$
I want my future patients to trust me	4.7	4.7	0.16
I feel in tune with the emotions of patients	3.5	3.8	$<0.01^a$
It is difficult for me to understand how another person feels if I have not had similar experiences	3.0	2.9	0.22
I care about the well-being of patients	4.6	4.7	0.045 <sup>a</sup>
I am afraid of discussing errors with patients <sup>b</sup>	3.6	3.5	0.05
I would feel comfortable telling a patient I made an error with their prescription	2.8	3.2	$<0.01^a$
If an error occurred but no harm was done, the patient should not be alerted <sup>b</sup>	2.9	2.6	$<0.01^a$

<sup>a</sup> Statistically significant at  $p<0.05$

<sup>b</sup> Reverse coded

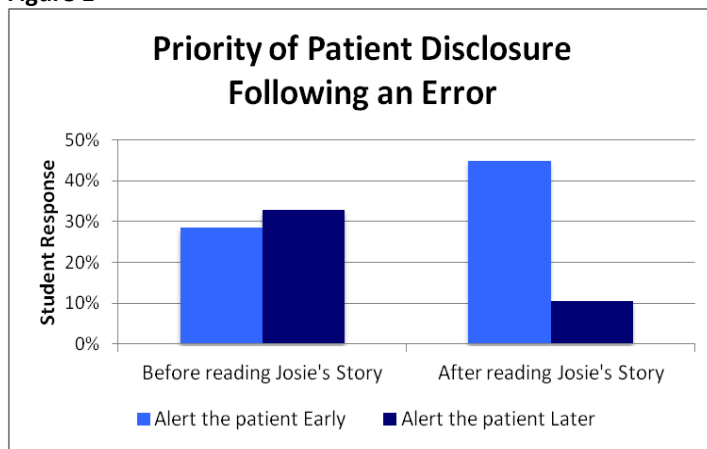
Note: 5=Strongly Agree, 4=Agree, 3=Neutral, 2=Disagree, 1=Strongly Disagree

### Intended Behavior when Interacting with Patients about a Medication Error

The majority of students (56%) indicated they would be more likely to speak with a patient directly about a medication error after reading the book, whereas only 3% were less likely, and 42% indicated they were just as likely.

Additionally, more students indicated that alerting a patient to an error should occur earlier in the process of managing a medication error after reading the book than they had before the activity (See Figure 1).

Figure 1



For the open ended question, “What is one thing that will change about the way you practice pharmacy because of reading *Josie’s Story*”, the most common response was relational: increased consideration of the patient’s and their family members’ concerns, and empathy for the patient. The second most commonly listed change was improved communication as a way to prevent errors. Only nine respondents stated there would be no change in their future practice and two stated that reading the book made it difficult to approach medication errors in their actual practice. (Table 4)

What is one thing that will change about your practice?	Number (%)
Consideration of patient’s and family’s concerns/empathy	43 (31%)
Improve communication	32 (23%)
Increase care and diligence to prevent errors	27 (20%)
Error prevention and disclosure	18 (13%)
No change	9 (7%)
Awareness of the impact of medication errors	7 (5%)
Difficulty discussing errors with patients	2 (1%)

### Discussion

This was the first time the *Josie’s Story* reading activity and discussion were used as a part of the module “Safety and Quality in the Medication Use Process” at the University of Wisconsin School of Pharmacy. Though the results of this questionnaire indicated that most students had been or knew someone who had been impacted by a medication error, it is unlikely that the majority of students completing the didactic portion of pharmacy school curriculum have first-hand experience with an error resulting in severe patient harm or death as is described in *Josie’s Story*. Many instructional methods have been incorporated into health professions education to allow students, residents, and fellows to explore the patient’s experience as well as focus on aspects of patient safety.<sup>10</sup> However, no studies were identified that have incorporated both foci into one educational activity. This activity was incorporated into the course to provide students with a framework to help them develop patient-centered care and provide a better understanding for the importance and relevance of medication safety.

Based on the questionnaire responses, the majority of students felt that the *Josie’s Story* activity was an effective way to learn and should be included in the class in the future (75% and 86% respectively, see Table 1). During the class discussion, students were generally engaged and willing to share opinions regarding the book, how it impacted them, and how they predicted they would react if they found themselves in similar situations as the healthcare providers in the book. Based on this discussion and the questionnaire results, use of *Josie’s Story* effectively created an opportunity for student self-reflection about the importance of medication safety.



As expected, both before and after the activity students consistently indicated they care about the well-being of patients and want their patients to trust them. Students also recognized the impact a medication error could have on patient trust in his or her health care providers. Interestingly, after the reading activity, responses indicated students tended to recognize the necessity for patients to be involved with their own care to a greater extent. This was reflected in responses to items involving patients' ability to prevent errors, need to question health care providers, and share responsibility for medication safety.

This activity effectively highlighted the importance of medication safety issues and set the groundwork for the rest of the semester. As most of the course would be devoted to theories and strategies used to minimize errors, the foundational motivating reasons for these efforts in terms of patient care outcomes were presented successfully. Reading the personal story of individuals who were deeply impacted by an error appeared to assist in bridging the gap between theory and patient advocacy.

Most students indicated they would feel afraid to discuss a medication error with a patient, though this was noted to a lesser extent after reading *Josie's Story*. Despite this, questionnaire responses revealed belief in the importance of communicating openly with patients, as more students indicated they would give priority to alerting patients to a medical error rather than completing other tasks first, such as documentation of the error. Additionally, many felt that even errors not resulting in harm ("near misses") should be communicated openly to patients.

A number of organizations, such as the Agency for Healthcare Research and Quality, the Joint Commission, and the World Health Organization have prioritized patient engagement in safety efforts.<sup>11</sup> Efforts have focused on enlisting patients in detecting errors, empowering patients to ensure safe care, and emphasizing patient involvement as a means of improving the culture of safety.<sup>12</sup> This movement in medication safety work was also discussed by Sorrel King in *Josie's Story*. She wrote of her strong belief that if given the opportunity, lay persons can and should assist in preventing errors. It is interesting that a majority of student participants in this study agreed that patients can prevent medical errors from happening to them, and, after the activity, fewer students believed that medication safety is solely the responsibility of the healthcare professional. Students consistently showed belief that communication is essential in the patient-provider relationship, that patients should have a trusting and open relationship with their providers, and that

patients should be able to question their actions. This was an unexpected, though encouraging, result of this activity.

There are several important limitations for this study. First, only one questionnaire was administered following completion of the activity. While students were asked to reflect on their impressions and attitudes prior to reading *Josie's Story*, this may result in different change scores than using separate pre- and post-surveys. Additionally, though there was a high student response rate, there is a potential for selection bias as participation was not a required part of the activity. Administration of the questionnaire directly after the in-class discussion could have swayed the opinions of some participants toward the sentiments expressed by the minority of students who spoke during the discussion. In addition, it is unclear whether attitudes and perspectives would be sustained following the activity. Finally, most items were assessed on a 5-point Likert-style scale, thus limiting the options for respondents to provide additional information or detail.

Despite these limitations, this paper describes an innovative and successful teaching strategy for increasing student empathy for patients and potentially providing a platform of relevance for students in a medication safety course. Additionally, students were asked to reflect on their own attitudes before and after the questionnaire providing the opportunity to compare pre/post data within individual students. Finally, this study was able to assess the impact of the activity on student attitudes, as well as student opinion regarding the usefulness of such an activity.

#### Future Direction

The *Josie's Story* reading activity and discussion will continue to be a component of the Medication Safety course at the University of Wisconsin. In the future, the activity will include presenting a video of the book author, identifying supplemental materials to include in this activity, and breaking up the discussion into smaller discussion groups for more active participation.

Ultimately, we hope that this intervention will sensitize students to the personal impact that medication errors can have on patients, orient students toward a culture of safety, and encourage students to recognize the role that patients can and should have in their own health care. As suggested by Macnaughton, future steps include exploring these attitudes in students after the course has ended and when they have completed their clinical rotations.<sup>13</sup>

#### Conclusion

A required reading assignment and class discussion was effectively incorporated into a medication safety class at a

school of pharmacy. This activity was generally well-received by students and appeared to have an impact on the perceived importance of medication safety and the patients' role in medication safety. It also appeared to effectively sensitize students to the need to consider the patient when managing a medication error. Other health professions programs interested in incorporating a patient's perspective might consider implementing a similar activity into their curriculum.

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### Appendix A. Questionnaire

Your participation is completely voluntary, confidential, and will not affect your grade in this course. Please do not write your name on the survey so it will not be possible for the study team to know personal information, including names, of who has completed the survey and who has not. Individual survey will not be viewed by course coordinators.

What is your major? Pharmacy Other (please list) \_\_\_\_\_

#### Perception on this activity

Please select your agreement with the following statements or provide an answer to the following questions.

Strongly agree=SA Agree=A Neutral=N Disagree=D Strongly disagree=SD

I already knew what I needed to know about medication safety before reading <u>Josie's Story</u>	SA	A	N	D	SD
Reading <u>Josie's Story</u> showed me I do not understand the importance and impact of medication safety as well as I thought I did	SA	A	N	D	SD
Reading <u>Josie's Story</u> was an effective way for me to learn about the relevance of medication safety.	SA	A	N	D	SD
I feel more motivated to learn about medication safety because of reading and discussing <u>Josie's Story</u> .	SA	A	N	D	SD
Discussing and reading about real patient's stories such as <u>Josie's Story</u> should remain part of the medication safety course.	SA	A	N	D	SD
Reading <u>Josie's Story</u> helped me reflect on my experiences with medication errors.	SA	A	N	D	SD
I think my future pharmacy practice will be impacted by the book <u>Josie's Story</u> .	SA	A	N	D	SD

Please answer the following questions.

- If you were to describe Josie's Story in one word, what would it be? \_\_\_\_\_
- What is one thing that will change about the way you practice pharmacy because of reading Josie's Story?  
\_\_\_\_\_
- Compared to how you felt before reading Josie's Story, how likely is it that you would speak with a patient directly about a medication error now? (circle one)

More likely                      Less likely                      About the same                      Not Applicable

#### Past Experiences

- Have you ever been involved with a medication error in the pharmacy where you work? Yes No
- Have you spoken with a patient regarding a medication error of any type? Yes No
- Have you or someone you know been affected by a medication error?  
Yes No

#### Perception on the topic of Medication Safety

Please answer the following questions.

- What is the most important reason for student pharmacists to study medication safety? \_\_\_\_\_

8. Suppose a medication error occurred. In what order would you complete the following tasks? Fill in the blanks below with numbers 1-6 to designate your answer.

<input type="checkbox"/> Alert the patient	<input type="checkbox"/> Fix and document the error
<input type="checkbox"/> Determine who is responsible for the error	<input type="checkbox"/> Tell the patient's physician
<input type="checkbox"/> Find out how the error can be prevented in the future	<input type="checkbox"/> Report the error to management

9. Consider your answer to the previous question. In what order would you have completed the following tasks **prior to** reading Josie's Story? Fill in the blanks below with numbers 1-6 to designate your answer.

<input type="checkbox"/> Alert the patient	<input type="checkbox"/> Fix and document the error
<input type="checkbox"/> Determine who is responsible for the error	<input type="checkbox"/> Tell the patient's physician
<input type="checkbox"/> Find out how the error can be prevented in the future	<input type="checkbox"/> Report the error to management

10. Please select your agreement with the following statements and gauge your current opinions regarding the statements and what you believed prior to reading this book.

Strongly agree=SA      Agree=A      Neutral=N      Disagree=D      Strongly disagree=SD

***Before reading Josie's Story    After reading Josie's Story***

I feel in tune with the emotions of patients	SA	A	N	D	SD	SA	A	N	D	SD
It is difficult for me to understand how another person feels if I have not had similar experiences	SA	A	N	D	SD	SA	A	N	D	SD
I care about the well-being of patients	SA	A	N	D	SD	SA	A	N	D	SD
Patients can prevent errors from occurring to them	SA	A	N	D	SD	SA	A	N	D	SD
Medication safety is the responsibility of the health care provider, not the patient or their family	SA	A	N	D	SD	SA	A	N	D	SD
Patients should be free to question the decisions of their health care provider	SA	A	N	D	SD	SA	A	N	D	SD
I want my future patients to trust me	SA	A	N	D	SD	SA	A	N	D	SD
I would feel comfortable telling a patient I made an error with their prescription	SA	A	N	D	SD	SA	A	N	D	SD
I am afraid of discussing errors with patients	SA	A	N	D	SD	SA	A	N	D	SD
If an error occurred but no harm was done, the patient should not be alerted	SA	A	N	D	SD	SA	A	N	D	SD
A single medication error can have a significant impact on a patient's trust in their medical professionals (doctor, pharmacist, dentist, etc)	SA	A	N	D	SD	SA	A	N	D	SD
Serious medication errors resulting in patient harm or death can occur in any health care setting	SA	A	N	D	SD	SA	A	N	D	SD

*Thank you for completing this survey. We appreciate your participation.*