

**HEALTH AND SAFETY SURVEY
TO IMPROVE PATIENT SAFETY IN END STAGE RENAL DISEASE**



**REPORT OF FINDINGS FROM THE ESRD PROFESSIONAL SURVEY
MARCH 2007**



PREPARED BY:



HEALTH AND SAFETY SURVEY PROJECT

REPORT OF FINDINGS FROM THE PROFESSIONAL SURVEY

INTRODUCTION

The Institute of Medicine's ongoing efforts to assess and improve the nation's quality of care have brought to light the dramatic chasm between what is known as good quality care and what is actually delivered. Reducing preventable medical errors and improving patient safety in End Stage Renal Disease (ESRD) is the focus of a series of activities to bring about positive change. Initiated in the late 1990's, the Renal Physicians Association (RPA), the Forum of ESRD Networks, and the National Patient Safety Foundation, collaborated over a two-year period to develop an action plan for ESRD Patient Safety. Among the top priorities was the implementation of both patient and health professional surveys to identify primary ESRD patient safety issues. Results from these surveys would then serve as the foundation for development of national initiatives to reduce errors and establish a culture of safety in ESRD.

This report presents findings from the professional survey. The professional survey was sponsored by the Renal Physicians Association and the Kidney and Urology Foundation of America (KUFA), in conjunction with the Network of New England, American Association of Kidney Patients (AAKP), American Nephrology Nurses Association (ANNA), Forum of ESRD Networks, and the National Renal Administrators Association (NRAA). Support was provided by an educational grant from Abbott Laboratories.

METHODS

A study planning team and the Evaluation Advisory Committee (EAC) were established at the initiation of the Health and Safety Survey Project to provide guidance to the study process. The planning team included representatives from the RPA, ESRD Networks, AAKP, the evaluation contractor and the contractor for the educational campaign. The EAC extended planning team perspectives by including additional representation from the ESRD Network, RPA, ANNA, National Renal Administrators Association, and Abbott Laboratories. Both groups were involved in refining survey goals, developing and refining planning documents, and reviewing and refining survey questions, deployment plans, and analysis plans. Both the patient and professional surveys were designed, implemented, and analyzed by an independent contractor, Management Solutions for Health, Inc, under subcontract to the communications contractor, Captus Communications, LLC. The study director was Marianne H. Alciati, PhD, President of Management Solutions for Health, Inc.

Survey Design and Pilot Testing: The survey design process began with development of a hemodialysis process map and an analysis framework. The process map detailed inputs and outputs in each of five major stages in a dialysis session. Inputs reflected actions or factors that might contribute to or help resolve patient safety issues. Outputs in this context reflected potential patient safety issues. This map was then reviewed by four patients and members of the study EAC for completeness and accuracy. Development of the process map was important to

ensure consideration of all potential sources of safety concern in determining the final set of survey items.

Building on this process map, an analysis framework was developed that presented draft survey items along two dimensions, the stages of the dialysis session as detailed in the process map and characteristics of potential safety issues. Characteristics of safety issues included a) types of safety issues and errors; b) frequency of safety issues and errors; c) factors that might contribute to safety issues and errors; and d) responses and systems for responding to safety concerns and errors. Identification of these characteristics for each item was important in ensuring that the final set of survey items would yield actionable information to inform the planned educational campaign. An html-generated copy of the survey instrument is included in Appendix A.

The final survey included 40 questions and 162 variables. Once all questions were near final, the online survey was developed. A subset of up to seven questions addressed the impact of natural events, such as hurricanes, on patient safety. Question routing ensured that survey respondents received only those questions appropriate to their health care role and responses to previous survey questions. The survey was pilot tested among a sample of health professionals. Additionally, all planning team and EAC members reviewed and commented on the online version several times. Final revisions were made based on these online reviews.

Sample Identification and Invitation: No list reflecting a representative population of ESRD health professionals was available and existing organizational contact lists were either not available or presented biases. Thus, a two-stage process was developed first to identify a study sample and gather email and demographic information through an online registration survey, and second to invite participation and provide access information to the health professional survey. Various promotional efforts were undertaken to encourage registration and participation in the health professional survey, including a study website, email notification through organization member lists, articles in newsletters, distribution of flyers at conferences, and presentations. Registration was completed online and was available from November, 2005 through April, 2006. Approximately 1,500 individuals accessed the registration survey, of which 944 usable registrations were obtained.

Survey Versions: Because the number of usable registration records fell below target sample sizes, two version of the final online health professional survey were launched. Registered participants were provided authentication information which granted access to a login survey by email. Registered participants who did not complete the online survey were provided reminders at various times in the survey process using their email information. An open access survey also was made available to health professionals through the Health and Safety Survey website. No authentication was required to access the open survey and no individualized reminders were provided.

Both surveys included the same questions in the same order and using the same routing logic. The open survey added a question at the end of the survey to allow respondents to provide their email in order to receive updates about the study and the patient safety initiative. Both surveys were launched on May 1, 2006.

Survey Hosting: Online surveys were developed and hosted by Management Solutions for Health, Inc. Real-time tracking reports were used to monitor survey progress. Following the close of survey access, data files from each survey were downloaded from a SQL database to SPSS .sav files. These files included information about survey start and stop times, various online actions (e.g., completed surveys, timed-out surveys), and survey metadata version.

Login Survey Response Rates: After cleaning duplicate and invalid records from the registration survey, 944 usable email registrations were available. Login survey invitations were sent by email on May 1, 2006. Ninety-six additional records were invalidated due to bad emails, duplicate records, or access denials, resulting in a final valid login survey sample of 848 registrants. A total of 556 login survey records were downloaded at the closed of the survey on July 31, 2006. Twenty-two records were removed during data cleaning due to incomplete data (greater than 95% of questions unanswered), bringing the final login survey sample to 534 records. The response rate based on this final number of usable surveys and the valid invitation sample of 848 was 63% of registrants.

The open online survey also launched on May 1, 2006. Two-hundred and forty-four individuals accessed the open online survey. Of these, 129 records were deleted during data cleaning due to incomplete data (greater than 95% of questions unanswered). The final open survey sample included 115 records. The final combined professional survey sample included 534 login records and 115 open records, totaling 649 surveys.

Statistical Analysis and Data Presentation: Data was downloaded from a SQL database into an SPSS .sav file. Statistical analysis was conducted using SPSS version 14.0 with an upgrade to SPSS 15.0 before the completion of analysis. Initial analyses consisted of data cleaning and coding missing values to appropriately account for coded skip patterns. Univariate frequency distributions were generated for all questions. Upon inspection, decisions were made to derive grouped variables (e.g., likelihood of reporting medical mistakes) before continuing analysis. Select frequency data is presented in the results section of this report. Detailed frequency tables and associated graphs as generated from statistical software is presented in Appendix B.

RESULTS

Survey results reflected seven general categories of information, including

- Sample characteristics – demographics, geographic distribution, care delivery
- Communications
- Patient falls
- Medical errors
- Needle sticks
- Hand washing
- Dialysis events – pre, during, and post
- Medical errors
- Patient safety grade
- Natural events

Results are presented in each of these categories below.

Sample characteristics: The vast majority of survey respondents are female (87%) between 40 and 59 years of age (68%). While all professional roles, except physician assistants, are represented, almost half the sample (48%) identified themselves as one of four nurse categories, including nurse practitioner, nurse, charge nurse, or nurse manager. Nurse Managers accounted for the highest proportion of respondents (25%) across all 14 role categories. Table 1 presents the distribution of respondents across all roles.

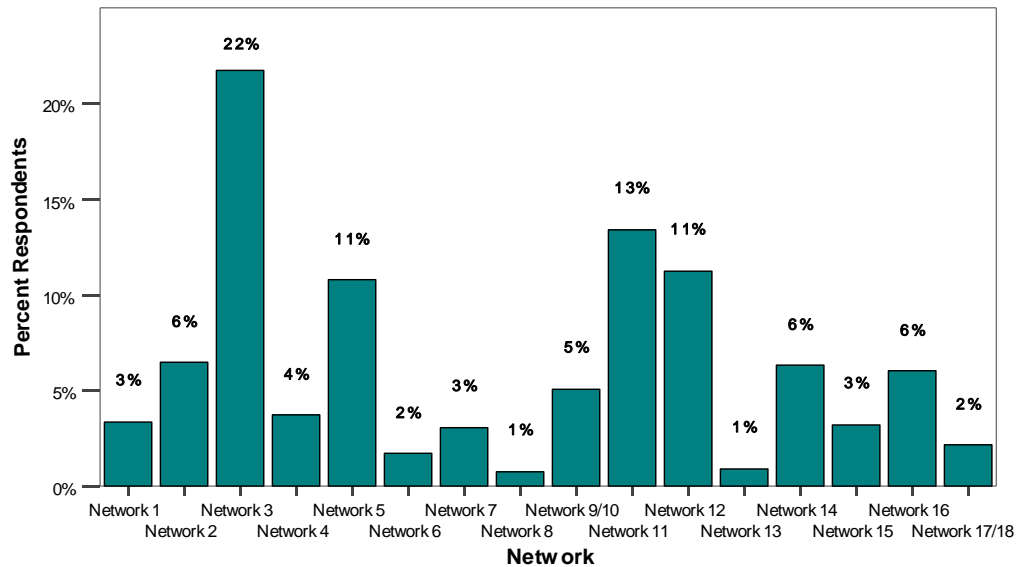
Table 1: Survey Respondents by Role

		Count	Column N %	Role Group
What is your current professional role at your dialysis center?	Administrative Assistant or Receptionist	33	5.1%	Assistants
	Social Worker	94	14.5%	
	Dietician	37	5.7%	
	Patient Care Technician	21	3.2%	
	Other Technician (e.g., machine, reuse)	19	2.9%	
	Physician Assistant	0	.0%	
	Nurse Practitioner	12	1.8%	Nurse
	Nurse	124	19.1%	
	Charge Nurse	54	8.3%	
	Nurse Manager	160	24.7%	
	Dialysis Facility Administrator	112	17.3%	Manager
	Area Manager	23	3.5%	
	Medical Director	26	4.0%	Doctor
	Medical Doctor	26	4.0%	
	Total	649	100.0%	

Respondents were not distributed evenly across US states and territories or across Networks. The largest proportion of respondents, nearly one quarter, was from New Jersey (21%). The next largest proportions of respondents were from New York (7%) and Texas (6%). Not surprisingly, Network 3, which includes New Jersey, represented the largest proportion of respondents by Network (22%). Network 11 represented the second largest proportion of respondents (13%) and Networks 5 and 12 equally represented the third largest proportions of respondents (11%) across all Networks (Figure 1).

The distribution of professional survey respondents across Networks was compared to available Centers for Medicaid and Medicare Services data about the distribution of full and part time nurses and professional assistants (e.g., patient care technicians, dieticians, social workers). These comparison data showed some differences between the survey sample and population. For both nurse and assistant roles, the professional survey sample appeared to over-represent Networks 3, 11, 12, and 5 and under-represent Networks 6, 8, 9 & 10, and 17 and 18.

Figure 1: Percent Respondents by Network



Among respondents who provide direct dialysis treatment care (all technicians, nurses, managers and doctors), the vast majority provide hemodialysis through vascular access or a catheter (97% and 96%, respectively). Fewer than half of respondents provide peritoneal dialysis (44%).

Large proportions of respondents providing direct dialysis treatment care have been providing care for 15 or more years (44%) and nearly two-thirds (64%) have been providing dialysis care for 10 or more years. Smaller proportions of these respondents, however, have been providing dialysis treatment services at their current dialysis center; only about one-third (34%) have been providing dialysis care at their current center for 10 or more years (Figure 2).

On average, assistants work 8 hours each day and average 35 hours per week. Nurses and managers work an average of 10 hours per day. Nurses work an average of 41 hours per week, while managers work an average of 45 hours per week. Both assistants and nurses indicated that they provide dialysis-related care for an average of 82 patients per week, while managers indicated that they provide dialysis-related care for an average of 149 patients per week. The standard deviation, a measure of the dispersion of individual scores around the mean was least for assistants and greatest for managers (assistants SD=5.4; nurses SD=111.0; and managers SD=177.7). The number of patients by categories for whom each role group provided dialysis-related services each week is shown in Figure 3.

Doctors were asked how many different patients outpatient dialysis-related care they were responsible for in a typical month. The mean number of patients for whom doctors were responsible for their dialysis-related care was 100, ranging from 5 to 500 (SD=112.8).

Figure 2: Time Providing Dialysis Treatment Services at Any and Current Dialysis Center

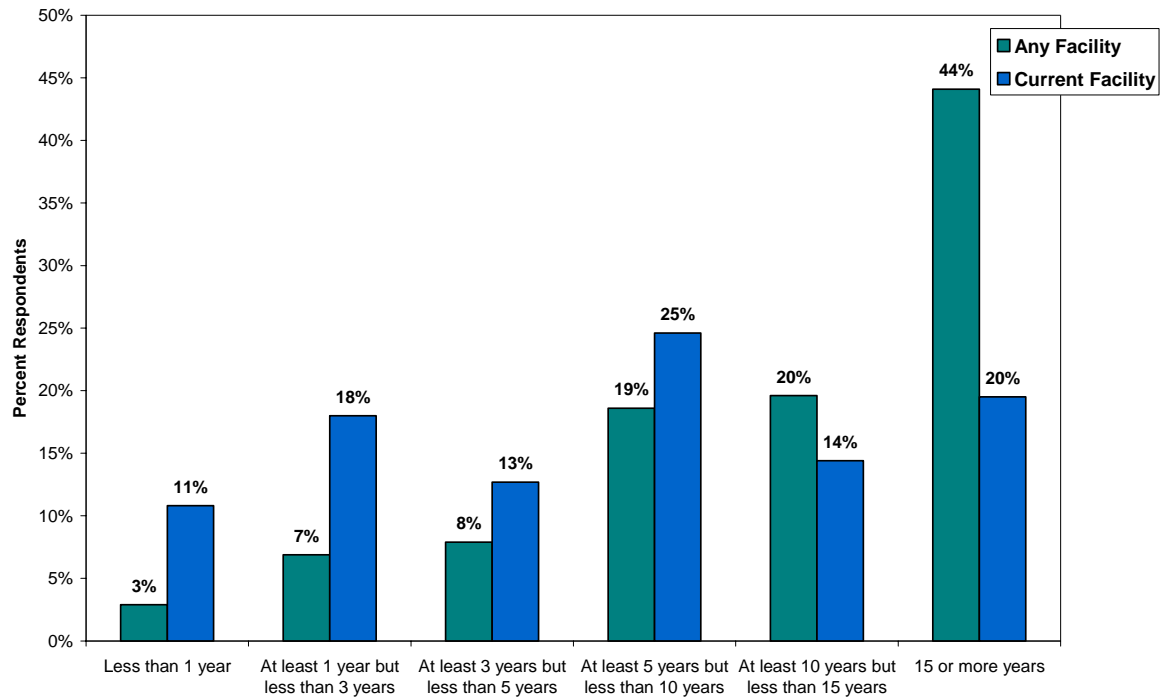
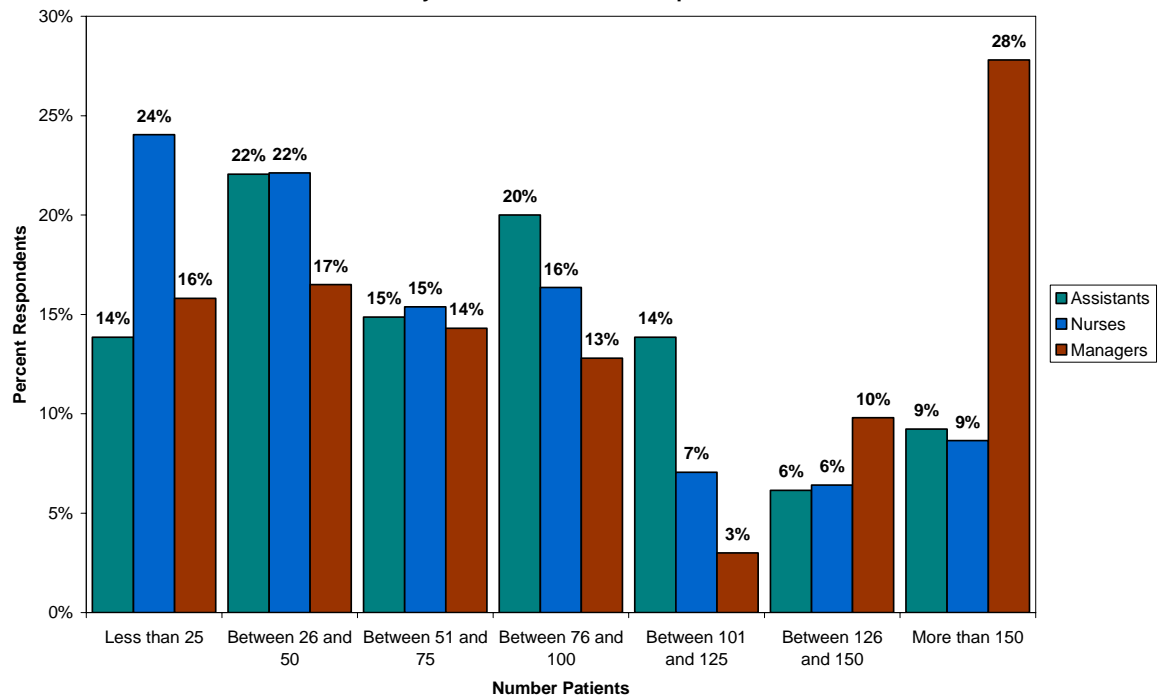
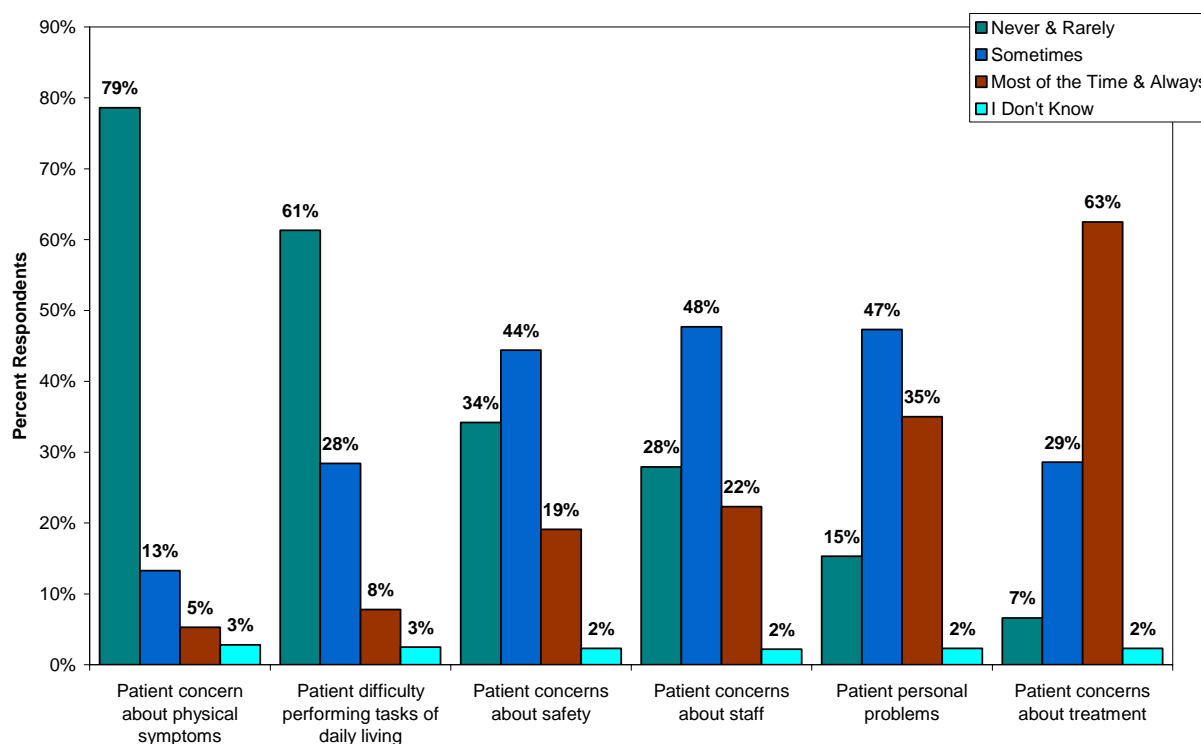


Figure 3: Percent Respondents by Number Patients They Provide Outpatient Dialysis-Related Services for per Week



Communications: The vast majority of health professionals indicated that it is easy (52%) or very easy (42%) to communicate with patients at their dialysis center. As reflected in Figure 4, larger proportions of respondents indicated that patients more frequently communicate about treatment concerns and personal problems (63% and 35% most of the time and always, respectively) than they communicate about difficulties performing acts of daily living or physical symptoms they are experiencing (8% and 5% most of the time and always, respectively). Almost half of respondents indicated that patients sometimes discuss concerns about safety (44%), concerns about staff (48%), and personal problems (47%).

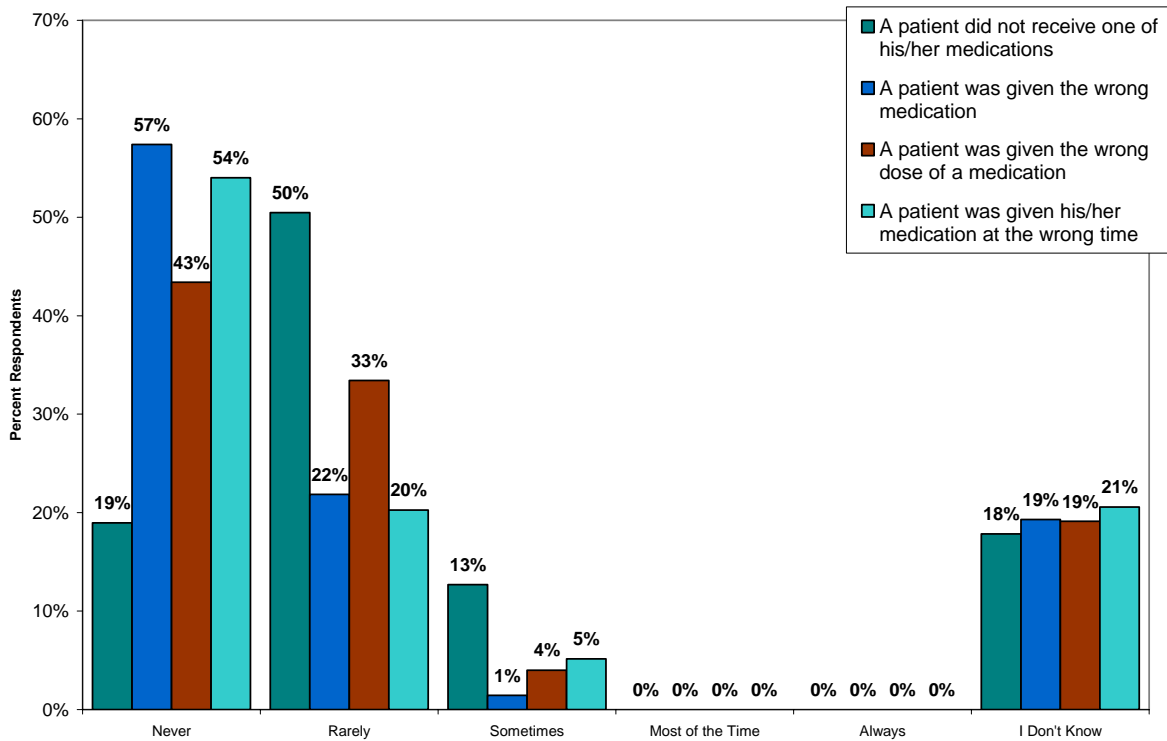
Figure 4: Percent Respondents by Frequency of Communication for Each Topic



Patient falls: Numbers of patient falls appear to be infrequent. The mean number of patient falls and number of different patients falling in the past three months was less than one (0.65 and 0.62, respectively). Most often, falls occurred because the patient was feeling dizzy or weak (40%). Less frequently, patient falls resulted from a patient tripping on equipment or furniture (12%) or the patient being too fatigued to walk (8%). More than one-third of respondents indicated that they did not know what caused patients' falls (43%).

Medication errors: Medication errors also appeared to occur infrequently (Figure 5). Very few errors were reported as occurring sometimes, and no medication errors were reported as occurring most of the time or always. More than half of respondents indicated that a patient was never given the wrong medication (57%) or given medication at the wrong time (54%) in the past three months. The most likely type of medication error appears to be a patient failing to receive one of their medications (63% sometimes or rarely) or being given the wrong does of a medication (37% sometimes or rarely).

Figure 5: Frequency of Medication Errors



Needle sticks: Two-thirds of patient care technicians and nurses (66%) indicated that they never or rarely had difficulty inserting the needles for a patients' dialysis treatment. The last time they had difficulty inserting needles for a dialysis treatment, almost two-thirds of respondents (62%) indicated that they made two attempts to insert the needles before getting assistance. The mean number of attempts to insert a needle before getting help or inserting the needle successfully was 1.77.

About half of patient care technicians, nurses, managers, and doctors (48%) indicated that their center has a written procedure for what to do if someone has difficulty inserting needles for a patient's dialysis treatment. Among centers having written procedures detailing what to do when having difficulty inserting needles, about half of respondents (45.4%) indicated that staff are very knowledgeable about these procedures and only 15 percent indicated that staff are only somewhat knowledgeable about these procedures. Just over one-third of respondents (37%) did not know if their center had such a written procedure.

Hand washing: One quarter of respondents (27%) indicated that staff at their center had 'ever failed' to wash their hands or change gloves before touching a patient's access site in the past three months. Another 47 percent indicated that they did not know if a staff member had ever failed to wash their hands or change gloves before touching a patient's access site.

Assistance: A majority of respondents (75%) indicate that it is easy to get assistance when they are having a problem during a patient’s dialysis treatment. An additional 14 percent of respondents indicate it is easy to get assistance.

Dialysis events: The frequency with which adverse safety-related events occur was assessed prior to, during, and following dialysis. As shown in Figure 6, most pre-dialysis events assessed were reported to occur infrequently. Failing to take a patient’s blood sample when scheduled was identified as occurring most often; more than one-third of nurses and doctors (37%) indicated that this event occurred sometimes. Setting up the wrong dialyzer was identified by 25 percent of nurses and doctors as occurring sometimes, and 15 percent indicated that patients are sometimes not asked about their health concerns.

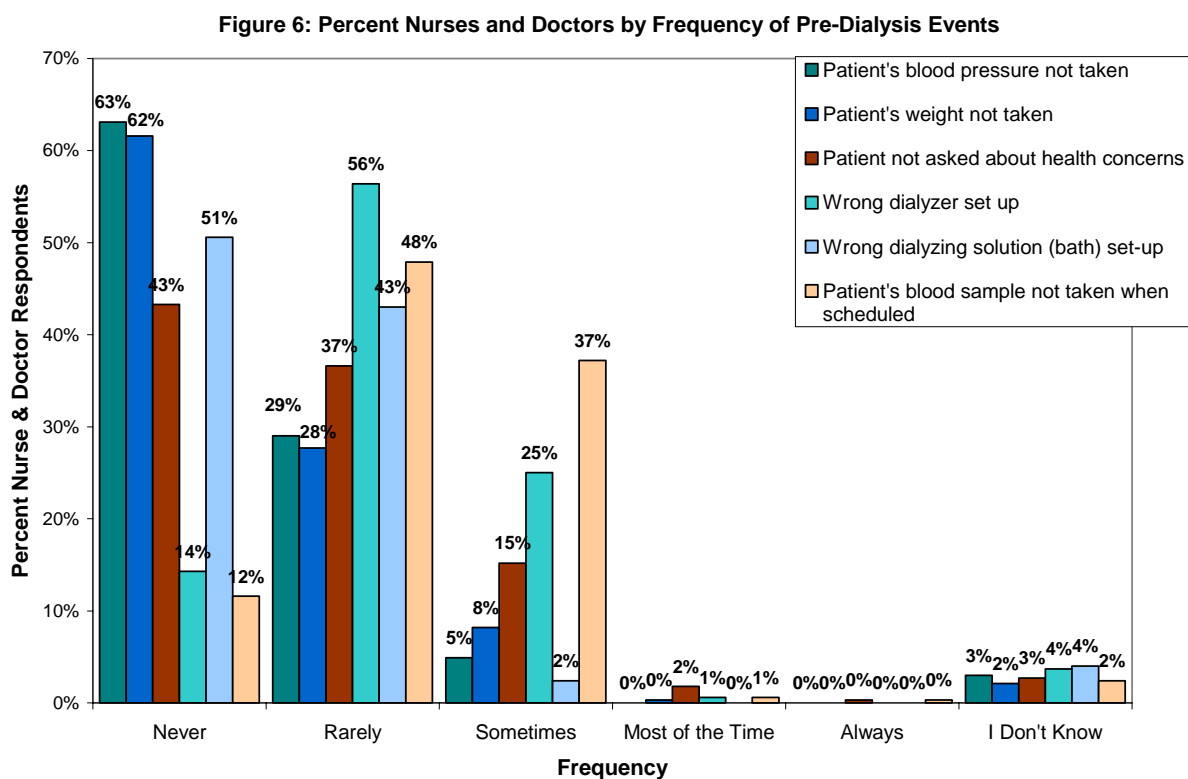


Figure 7 shows the frequency of seven different safety-related events that can occur during dialysis. Occurrence of each event was assessed in over the prior three months. Compared to events prior to dialysis, several of the events during dialysis appear to occur with greater frequency. More than half of respondents (53%) indicated that problems with the flow of blood between a patient’s access site and the dialysis machine sometimes occurred. Forty-one percent of respondents indicated that problems associated with a patient’s blood clotting sometimes occurred, and 29 percent indicated that a patient’s treatment sometimes had to be stopped before the session was completed. These three events during dialysis were the most frequently occurring events as reported by respondents among all during-dialysis events queried.

Figure 7: Percent Nurses and Doctors by Frequency of During-Dialysis Events

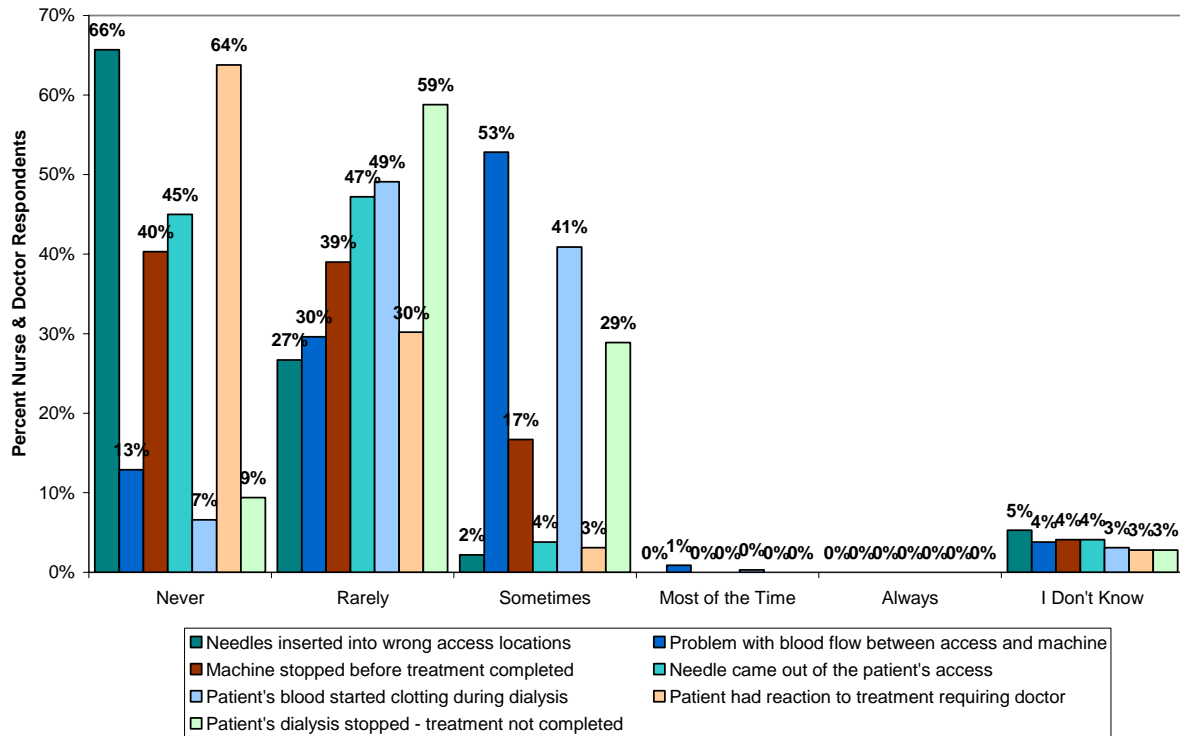
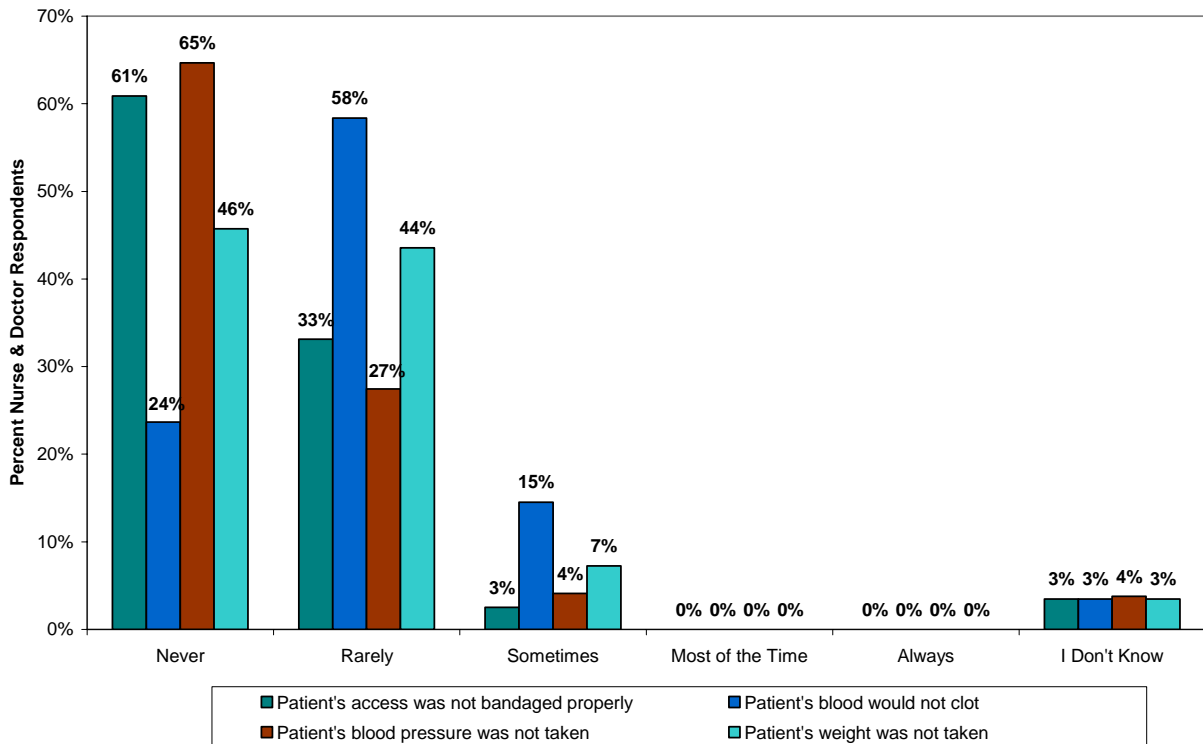


Figure 8: Percent Nurses and Doctors by Frequency of Post-Dialysis Events



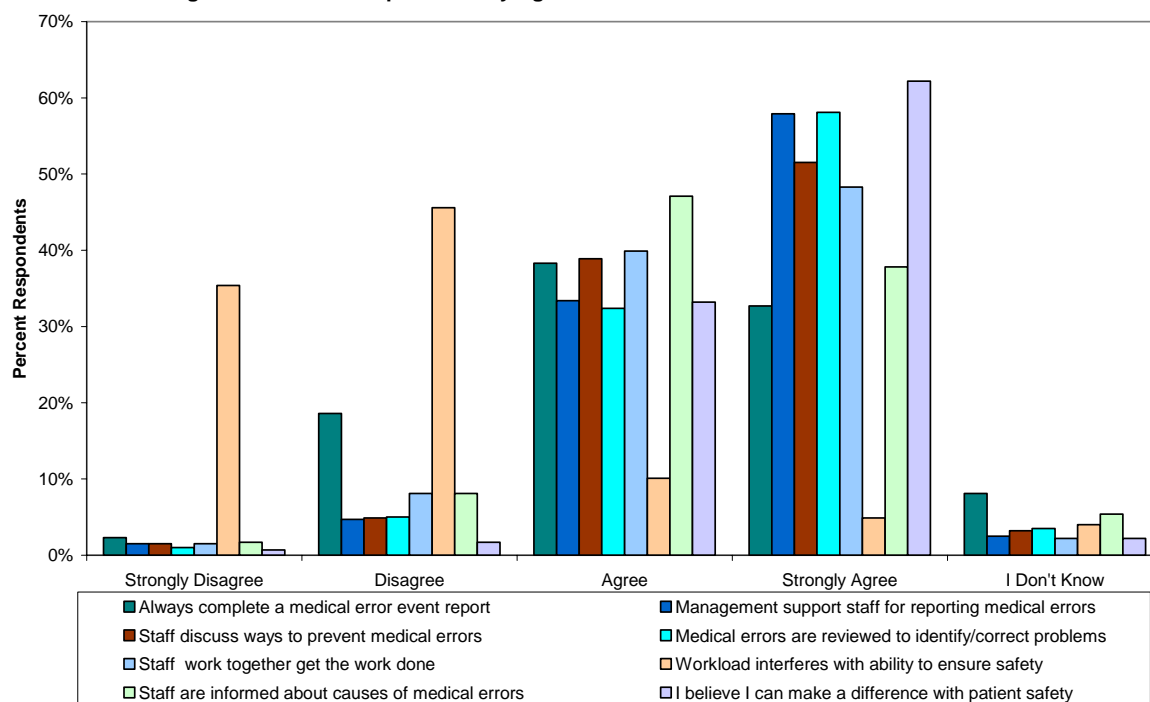
Frequency of post dialysis events also was low. Between 82 and 94 percent of nurses and doctors indicated that each of the four post dialysis events never or rarely occurred (Figure 8). These events included improper bandaging of a patient's access site, a patient's blood failing to clot, failing to take a patient's blood pressure, and failing to take a patient's weight.

Medical errors: All respondents answered questions about medical errors. Seventy percent of respondents indicated that a mistake during a patient's dialysis session occurred never or rarely over the past three months. Eighteen percent of respondents did not know whether a mistake had occurred. When asked about the seriousness of the last mistake to have been made during a dialysis patient's treatment, 70 percent indicated the mistake was not at all serious or only somewhat serious. A majority of respondents also indicated that the likelihood was very low that a medical mistake that could harm a patient would be made during a dialysis session at their center. On a scale from 1 to 10, with 1 being very unlikely, the mean score indicating the likelihood of a medical mistake was 3.2 and the median was 2.

Large proportions of respondents indicated they are likely to report medical mistakes. Just under 90 percent (89%) of respondents indicated they would be likely to report a mistake if they made one. Only a slightly smaller proportion (82%) indicated that they would be likely to report a medical mistake that they observed.

Consistent with these observations, Figure 9 shows that large proportions of respondents agree with positive statements about their dialysis center's patient safety environment. Between 85 and

Figure 9: Percent Respondents by Agreement with Statements About Medical Errors**



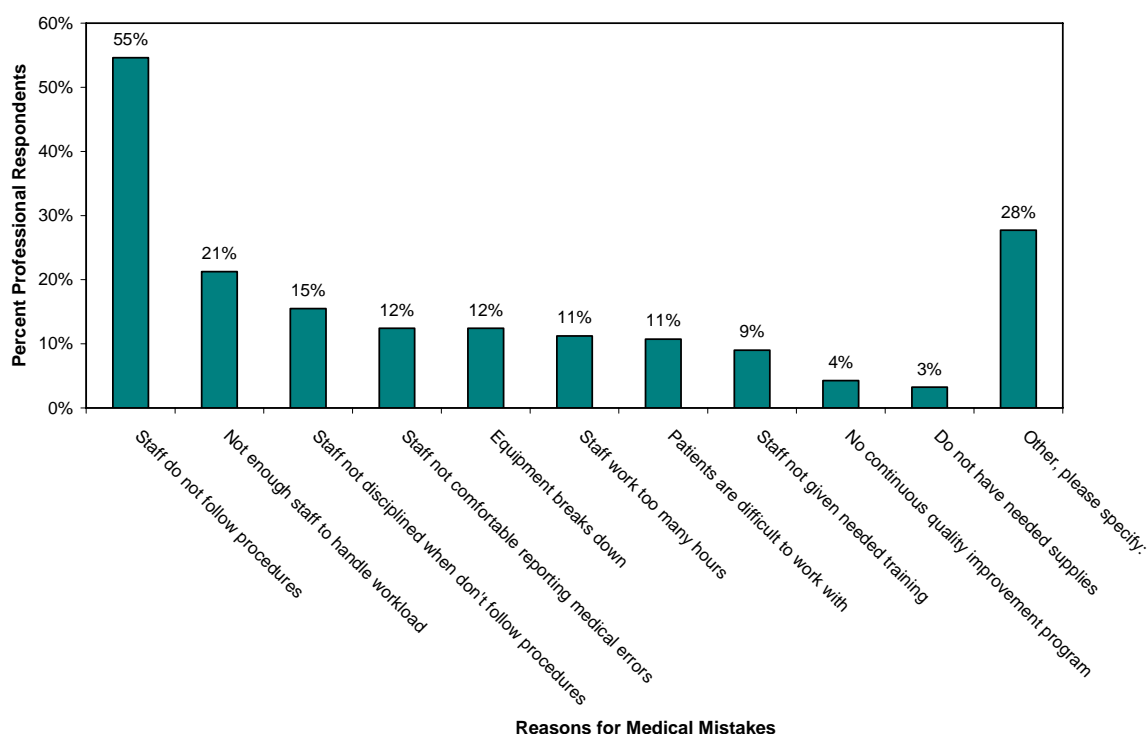
****Individual data percentages not shown due to graph size.**

95 percent of respondents agree or strongly agree that management supports reporting of medical errors, staff discuss ways to prevent errors, information about errors is reviewed to correct problems, staff are informed about errors that happen, when a lot needs to be done staff work together as a team, and they can make a difference in patient safety. One statement, however, had slightly lower rates of agreement – only 71 percent of respondents agree or strongly agree that staff always complete an event report when a medical error occurs. Eighty-one percent of respondents disagree or strongly disagree with the statement that their workload interferes with their ability to ensure patient safety.

Staff agreement with these statements about medical errors was further assessed across groups based on likelihood of reporting medical errors. In all cases, respondents who were more likely to report medical errors were more likely to agree with positive statements about their centers safety environment (See Appendix B for statistics).

Professionals also indicated reasons for the medical errors that do occur. As shown in Figure 10, small proportions of professionals attribute medical errors to difficulties with patient, or deficiencies in staffing, equipment, or quality improvement programs. Interestingly, more than half of professionals attributed medical errors to staff failing to follow procedures. This perspective appears not to be influenced by respondents' likelihood of reporting medical errors. No significant differences in the proportion of professionals indicating that medical errors are due to failures to follow procedures were noted across groups based on likelihood of reporting medical errors ($X^2 = 0.117$; $p=0.943$).

Figure 10: Percent Professionals Indicating Each Reason for Medical Mistakes



Patient safety grade: Overall, respondents gave their dialysis centers high marks for patient safety. As shown in Table 2, almost 90 percent of respondents gave their dialysis center a grade of A or B.

Table 2: Overall, what grade on patient safety would you give your dialysis center?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	A - Excellent	265	40.8	45.1	45.1
	B - Very good	257	39.6	43.7	88.8
	C - Acceptable	61	9.4	10.4	99.1
	D - Poor	4	.6	.7	99.8
	E - Failing	1	.2	.2	100.0
	Total	588	90.6	100.0	
Missing	No response	61	9.4		
Total		649	100.0		
Mean = 1.67, Median 2 using A=1 and E=5					

Natural events: Twenty-one percent of respondents indicated that dialysis treatment services had been affected by a natural event during the past year. The most frequent disruptions were from snow storms; 50 percent of respondents indicated that the single natural event that most affected services was a snow storm. Only 11 percent of respondents (n=12) indicated that the single event that most affected treatment services at their dialysis center was either Hurricane Katrina or Hurricane Rita (Table 3).

In terms of preparations for events other than Hurricanes Katrina or Rita (Figure 11), respondents most often indicated that they asked patients to get dialysis before the event, called patients to discuss plans, and prepared information packages (47%, 47%, 45%, respectively). Only about one-third of respondents indicated that they asked staff to stay at the center (38%), checked to make sure the generator was working (31%), or delivered information packages to patients (30%).

The impact of natural events on dialysis services following these events appears to have been minimal (Figure 12). Most respondents indicated that each item assessed did not occur at all. Most often, events resulted in reducing the length of dialysis treatments for up to one week following the event (45% of respondents).

Table 3: Single Natural Event Most Affecting Dialysis Services During Past Year

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	loss of electrical power	18	3.4	15.9	15.9
	flooding	3	.6	2.7	18.6
	snow storm	57	10.7	50.4	69.0
	blizzard	8	1.5	7.1	76.1
	tornado	6	1.1	5.3	81.4
	wind storm	1	.2	.9	82.3
	Hurricane Katrina	7	1.3	6.2	88.5
	Hurricane Rita	5	.9	4.4	92.9
	A hurricane other than Katrina or Rita	7	1.3	6.2	99.1
	Other, please specify	1	.2	.9	100.0
	Total	113	21.2	100.0	
Missing	No response	41	7.7		
	No natural disaster	380	71.2		
	Total	421	78.8		
Total		534	100.0		

Figure 11: Percent Respondents by Frequency of Events to Prepare for Natural Event Other Than Hurricanes Katrina or Rita

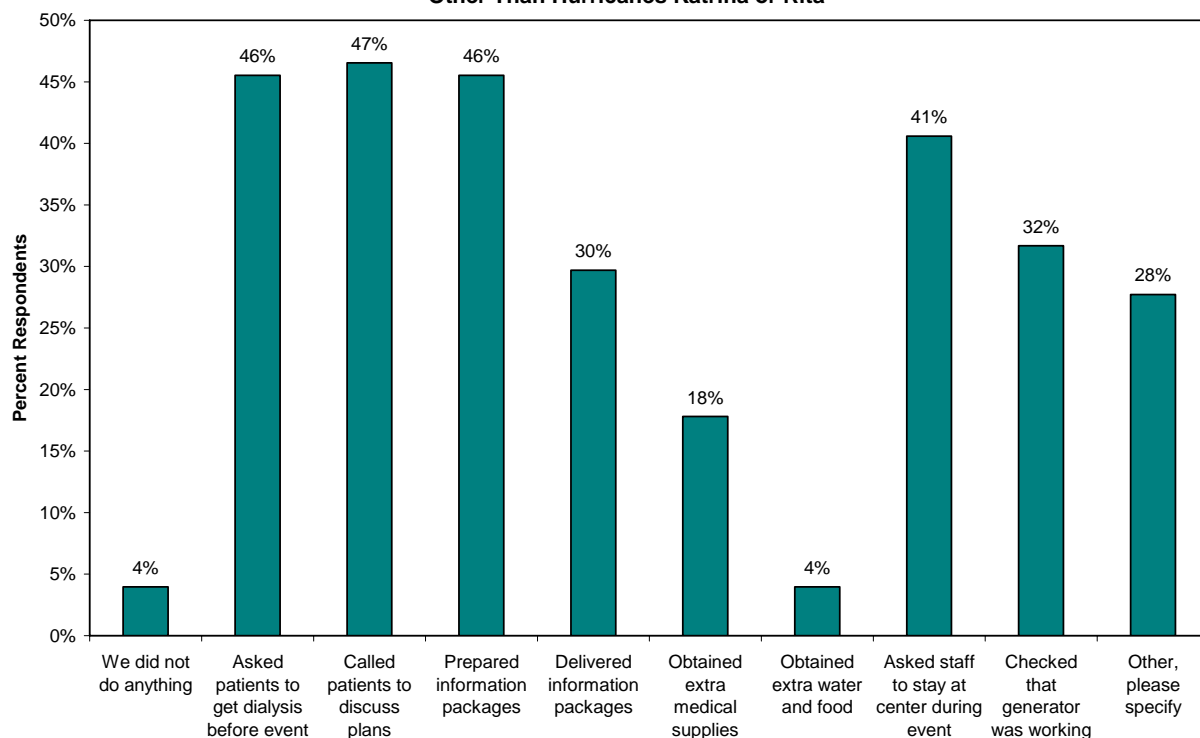
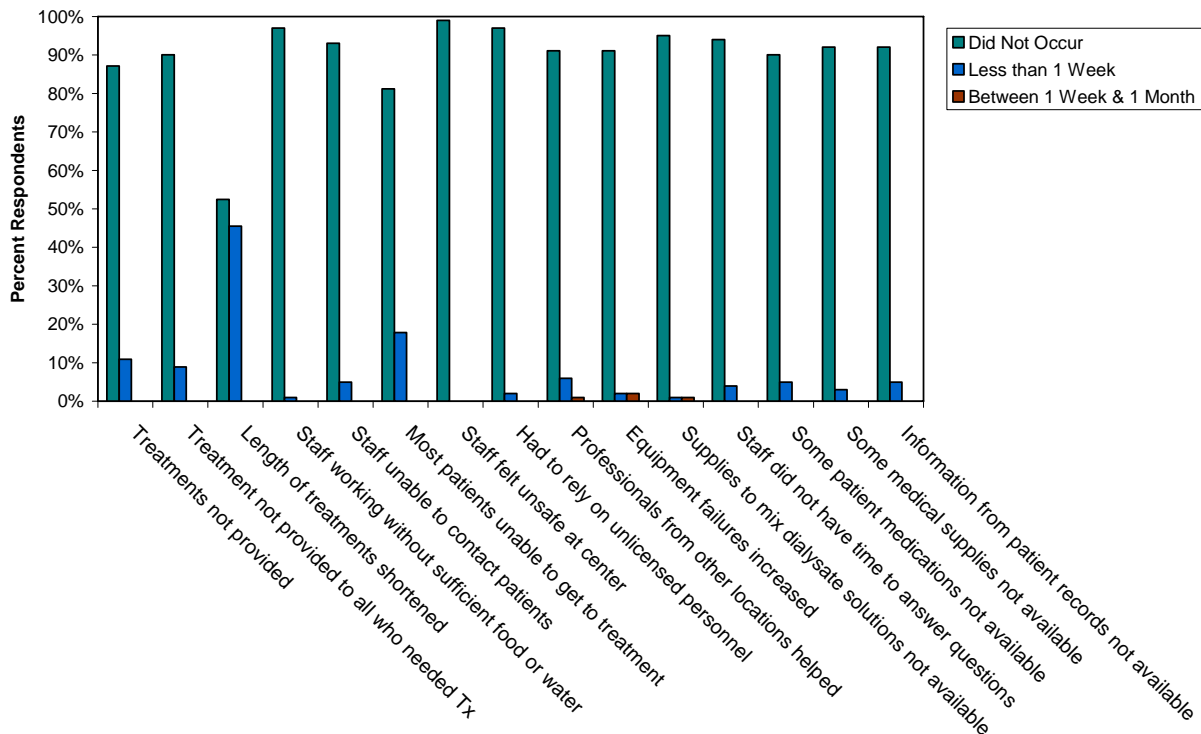


Figure 12: Percent Respondents by Time Each Item Occurred After Natural Event Other Than Hurricanes Karina or Rita



****Individual data percentages not shown due to graph size.**

CONCLUSIONS

This survey assessed health professionals' perspectives about in-center dialysis events that might be associated with patient safety problems. Individuals participating in the survey represented the full range of professional roles providing care for hemodialysis patients and included participants from all ESRD Networks. However, interpretation of survey findings must consider some limitations associated with the survey sample.

Limitations: Two general survey sample limitations are noted. First, survey participation required either active registration with subsequent response to an email invitation, or online navigation to the survey through dialysis-related websites. No incentives were provided, other than contributing to knowledge about dialysis patient safety issues. Thus, the resulting sample might include professionals who are more engaged in patient safety issues and/or more proactive about their involvement in the renal health community. This type of bias might be expected to result in a more favorable picture of patient safety compared to the entire population of dialysis professionals.

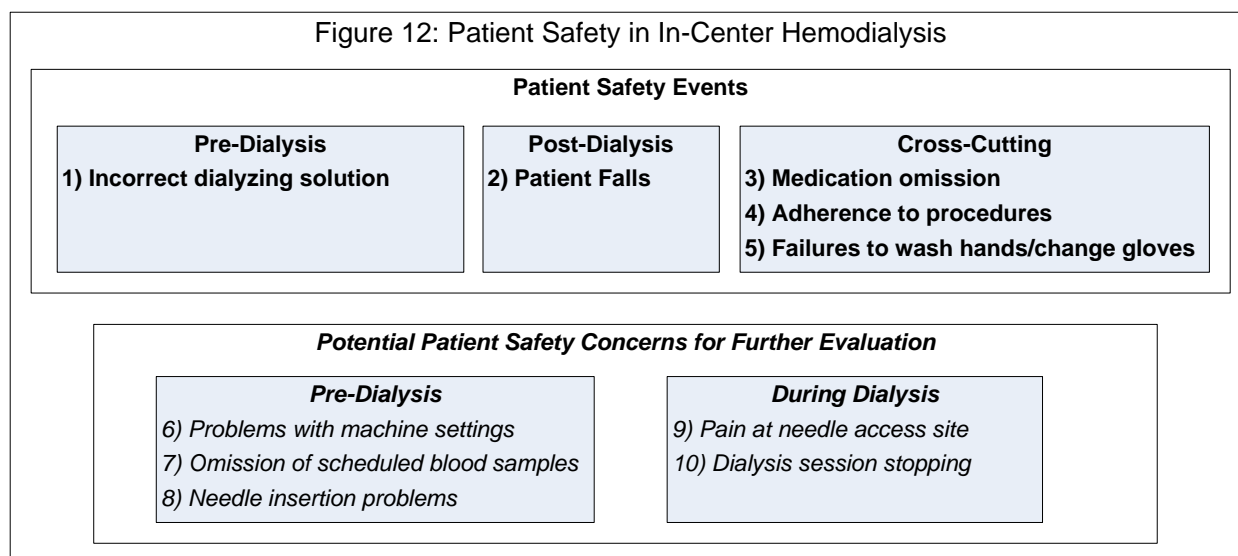
Second, while respondents included individuals from all ESRD Networks and professional roles within dialysis centers, the sample distribution across Networks and roles varied somewhat from the population of all dialysis center professionals. Some Networks were under-represented and others over-represented in the final survey sample and the sample under-represented some

professional roles, such as medical doctors. About half of all Networks were affected by either over- or under-representation based on distribution data about nurses. The magnitude of over- and under-representation across these eight Networks appears relatively moderate; less than 8 percent in all but two cases with over-representation ranging from 11 to 14 percent for these two Networks. The most represented professional role in the survey was nurses, but individuals in these nurse roles represent an important front-line perspective about events in dialysis centers. For these reasons, these distribution issues are considered fairly moderate limitations in the overall interpretation of survey findings and are weighed against the paucity of professional data on ESRD patient safety.

Criteria for Identifying Safety Threats: Events posing safety threats include all events directly or indirectly contributing to actual or potential patient harms. The magnitude of patient harms can vary widely across events as can the frequency with which these events occur. Safety threats are not defined only as those causing significant harm or those occurring with high frequency. Even low frequency events having relatively minor patient consequences can result in large safety issues because of the large numbers of patients that receive dialysis and the frequency of patient dialysis sessions.

Another important factor considered in identifying safety threats from survey data was the potential for corrective action. Thus, interpretation of survey findings focused on identifying patient safety threats that could be realistically addressed in the near-term and for which corrective action would have a measurable impact on patients and the patient safety environment. Similarly, issues identified for follow-up evaluation reflect events for which clear interpretation of the magnitude, severity, or cause is not clear from existing evidence.

Based on these criteria, five specific threats to patient safety and five safety concerns for further evaluation were identified. These are presented in Figure 12 and each type of finding is discussed below.



Patient Safety Threats: Five specific threats to patient safety were identified from the professional survey. These include a) setting up an incorrect dialyzing solution prior to a dialysis session, b) patient falls following dialysis, c) medication omissions, d) staff failures to adhere to procedures, and e) staff failures to wash their hands or change gloves before touching a patient's access site.

Incorrect Dialyzing Solution: Nearly two-thirds of professionals report that the wrong dialyzing solution had been set-up for a patient within the past 3 months. At best, this type of error reflects a near miss, and at worst reflects a dangerous error that can result in great harm to patients. It is not known from this survey data how many sessions are actually started using an incorrect dialyzing solution, the number of patients affected by this type of error, or the magnitude of effects of incorrect dialyzing solutions being used. However, feasible remedies for ensuring that initial set-up errors do not result in patient harm are available, ranging from patient and professional education, to procedural safeguards such as technician checklists and/or "red rules" for set-up procedures.

Interestingly, findings from the companion patient survey show that patients often don't know if there is a problem with their dialyzing solution and patients who indicate they are involved in their dialysis care are less likely to indicate that they have had the wrong dialyzing solution set up for their treatment compared to patients who indicate they are uninvolved in their dialysis care (80% vs. 46%, respectively). Thus, increasing patient involvement in their dialysis care and safety issues may provide another approach to safeguarding against solution errors.

Patient Falls: While the frequency of patient falls is generally low, the number of falls across all patients and dialysis sessions is large. Consider that if five percent of patients fall in a three month time period, and there are 304,799 prevalent patients receiving hemodialysis, there would be 15,240 patients falling every 3 months. Further, most patient falls are largely preventable and there appear to be a small set of factors that contribute to these falls. The most frequent reason given by patients in the companion patient survey for falling is feeling dizzy or weak, a finding corroborated by other reports. Additional attention to post-dialysis blood pressure levels, assistance as patients initially stand coupled with queries about their steadiness, and removal of physical obstacles to patient navigation could all serve to reduce patient falls.

Medication omission: Professionals indicate that medication errors are generally an infrequent event. However, the consequence of each occurrence of a medication error, particularly omitting a patient's medication, can be quite significant and result in medical harm. Omission of a patient's scheduled medication is reported to occur over a relatively short timeframe (the past three months) by large proportions of professionals. And substantial evidence exists demonstrating that dialysis patients take large numbers of different medications each day; most take between 6 and 10 medications per day based on the patient survey. Thus, despite professionals' indications that this type of error occurs rarely or only sometimes, the numbers of occurrences and number of patients affected by medication omissions may be quite large, particularly when assessed over longer timeframes. Similar to other patient safety threats, medication omissions might be resolved relatively easily through a combination of professional and patient education and systems changes that build safeguards into medication routines and procedures.

Adherence to procedures: While a majority of professionals are aware of medical mistakes made during the past three months, professionals generally indicated that medical mistakes occur infrequently and that when they occur, they are not serious. However, professionals also indicate that medical mistakes are most often attributable to failures to adhere to procedures. The extent to which these failures reflect legitimate ‘work-arounds’ designed to remedy unique environmental, staffing, or other issues is unknown. At a minimum, such unique circumstances should be integrated into ongoing quality improvement and procedural updates. But it is also possible, that failures to adhere to procedures reflect more systemic problems. In light of the high levels of agreement with positive statements about environmental factors contributing to strong safety environments, these systemic problems may reflect issues with procedural guidance, training, and/or enforcement. Further evaluation is needed to understand the nature and underlying issues associated with failures to adhere to procedures.

Failures to Wash Hands/Change Gloves: Just over one quarter of professionals indicated they were aware of another staff member failing to wash their hands or change gloves before touching a patient’s access site. In light of substantial evidence about the infection risks associated with failures to wash hands or change gloves in medical settings and extensive education efforts, the recalcitrance of this behavioral failure to correction seems remarkable. Innovative new approaches that extend beyond education may be needed and should be explored.

Potential Concerns for Further Evaluation: Five additional issues were identified from professional survey responses that raise concerns about patient safety threats, but for which additional information is needed. These issues are reflected in the bottom portion of Figure 12.

More than 80 percent of professionals indicated problems during the set-up for patients’ dialysis sessions, notably with machine settings and needle insertions. Issues associated with machine settings can result in patient harm, but it is unclear what settings are problematic and whether patients’ sessions are initiated without these problems being resolved.

Needle insertion problems have been recognized in previous work as a potential safety issue and certainly as a patient comfort and satisfaction issue. Needle insertion problems can result in long-term scarring issues and cause pain for patients. Similar to issues associated with patient falls, even if insertion issues occur infrequently, the large number of dialysis patients and the frequency of their dialysis sessions results in a very large incidence of insertion problems. This study found that fewer than half of centers have a needle insertion policy and among those with a policy, fewer than half of respondents indicated that staff are very knowledgeable about the policy. While follow-up educational initiatives can build on current efforts to increase awareness about needle insertion problems, additional information is needed about the nature and consequences of these needle insertion issues, both on patient health and satisfaction. Potentially related to needle insertion problems, nearly 40 percent of patients in the ESRD patient survey report pain at their needle access site. To what extent are needle insertion problems related to pain at patients’ access sites? What is the practical influence of center policies and what issues contribute to gaps in policy effectiveness? These questions form the basis for further exploration of these potential safety issues.

Failure to collect scheduled blood samples also was reported by large proportions of professionals. It is unclear, however, whether these samples were collected at an alternate, potentially more appropriate time. More importantly, were associated blood tests missed or delayed to an unfavorable timeframe? How did these delays or omissions influence patient outcomes?

More than 90 percent of professionals reported that in the past three months a patient's dialysis session had to be stopped and was not completed. While some circumstances for stopping and failing to complete a dialysis session might be appropriate, this could signal significant patient safety risks in many circumstances. How frequently are dialysis sessions stopped? Why are sessions stopped and why are some not completed? Are subsequent sessions adjusted when a session has been stopped? Resolution of these additional questions is essential to understanding the implications of session stopping for patient safety.

Summary: In summary, this professional survey provides a strong basis for both actions to improve patient safety in dialysis centers and further exploration of events that may contribute to safety problems. Evidence is provided to support areas of strength, including communications with patients, ease of getting assistance, routine completion of pre-dialysis tasks such as taking patients' weight and blood pressure, and agreement with indicators of strong patient safety environments. Professionals who are more likely to report medical mistakes also are more likely to agree with indicators of a strong patient safety environment, adding support to the potential benefits of these environmental changes. Further, professionals generally give their centers positive safety grades.

However, several issues also emerged that reflect important safety threats, particularly in relation to data from the companion patient survey. These include setting-up incorrect dialyzing solutions, patient falls, medication omissions, failures to adhere to procedures, and failures to wash hands or change gloves before touching a patient's access site. Initiatives are needed to address these issues in the near-term to reduce the potential for patient harm and strengthen the environment of safety within ESRD centers.

A question response is missing

ROLE

What is your current professional role at your dialysis center? (Check All That Apply)

- ☐ Administrative Assistant or Receptionist
- ☐ Social Worker
- ☐ Dietician
- ☐ Patient Care Technician
- ☐ Other Technician (e.g., machine, reuse)
- ☐ Physician Assistant
- ☐ Nurse Practitioner
- ☐ Nurse
- ☐ Charge Nurse
- ☐ Nurse Manager
- ☐ Dialysis Facility Administrator
- ☐ Area Manager
- ☐ Medical Director
- ☐ Medical Doctor

STATE

In which state is your current dialysis center located?

- ☐ AL
- ☐ AK
- ☐ AZ
- ☐ AR
- ☐ CA
- ☐ CO
- ☐ CT
- ☐ DE
- ☐ DC
- ☐ FL
- ☐ GA
- ☐ HI
- ☐ ID
- ☐ IL
- ☐ IN
- ☐ IA
- ☐ KS

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- ☐ KY
- ☐ LA
- ☐ ME
- ☐ MD
- ☐ MA
- ☐ MI
- ☐ MN
- ☐ MS
- ☐ MO
- ☐ MT
- ☐ NE
- ☐ NV
- ☐ NH
- ☐ NJ
- ☐ NM
- ☐ NY
- ☐ NC
- ☐ ND
- ☐ OH
- ☐ OK
- ☐ OR
- ☐ PA
- ☐ RI
- ☐ SC
- ☐ SD
- ☐ TN
- ☐ TX
- ☐ UT
- ☐ VT
- ☐ VA
- ☐ VI
- ☐ WA
- ☐ WV
- ☐ WI
- ☐ WY

DIALTYP

Which types of dialysis treatments do you currently administer to patients?
(Check All That Apply)

- ☐ hemodialysis through a vascular access
- ☐ hemodialysis through a catheter (temporary or permanent)
- ☐ peritoneal dialysis through the patient's stomach

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TIMEPRO

How long have you been providing dialysis treatment services at any dialysis center?

- ☐ Less than 1 year
- ☐ At least 1 year but less than 3 years
- ☐ At least 3 years but less than 5 years
- ☐ At least 5 years but less than 10 years
- ☐ At least 10 years but less than 15 years
- ☐ 15 or more years

TIMEPRI

You indicated that you have been providing dialysis treatment services for '{#timepro}'. How long have you been providing dialysis treatment services at your current dialysis center?

- ☐ Less than 1 year
- ☐ At least 1 year but less than 3 years
- ☐ At least 3 years but less than 5 years
- ☐ At least 5 years but less than 10 years
- ☐ At least 10 years but less than 15 years
- ☐ 15 or more years

NUMPATMO

How many different hemodialysis patients' outpatient dialysis-related care are you responsible for in a typical month?

(0 - 1000)

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TIMEDAY

What time of day do you most often work at your dialysis center? (Check Only One)

- ☐ Days during the week
- ☐ Evenings during the week
- ☐ Nights during the week
- ☐ Days on weekends
- ☐ Evenings on weekends
- ☐ Nights on weekends

NUMPATWK

How many different hemodialysis patients do you provide outpatient dialysis-related services for in a typical week?

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(0 - 1000)

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HRSWEEK

How many hours do you work in a typical week at your dialysis center?

(0 - 168)

--	--	--

HRSDAY

How many hours do you work in a typical day at your dialysis center?

(0 - 24)

--	--

HRSEVE

How many hours do you work in a typical evening at your dialysis center?

(0 - 24)

--	--

HRSNGT

How many hours do you work in a typical night at your dialysis center?

(0 - 24)

--	--

PREDIAL

In the past 3 months, how often did each of the following occur before a patient's dialysis treatment? (Check One in Each Row)

	Never	Rarely	Sometimes	Most of the Time	Always	I Don't Know
A patient's blood pressure was not taken before starting the patient's dialysis treatment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A patient's weight was not taken before starting the patient's dialysis treatment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A patient was not asked about his/her health concerns before						

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starting the patient's dialysis treatment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
There were problems with the settings on a patient's dialysis machine	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The wrong dialyzer was set up for a patient's dialysis treatment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The wrong dialyzing solution (bath) was set-up for a patient's dialysis treatment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A patient's blood sample was not taken during the visit in which it was scheduled	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

DISC MED

How often does a doctor or nurse at your center review with a patient all the medications the patient is taking?

- ☐ At least once every month
☐ Once every 2 to 5 months
☐ Once every 6 to 11 months
☐ Once a year
☐ Less often than once a year
☐ I Don't Know

MED ERR

In the past 3 months, how often did each of the following medication errors occur? (Check Only One in Each Row)

	Never	Rarely	Sometimes	Most of the Time	Always	I Don't Know
A patient did not receive one of his/her medications	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A patient was given the wrong medication	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A patient was given the wrong dose of a medication	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A patient was given his/her medication at the wrong time	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

NDLS DIF

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In the past 3 months, how often did you have difficulty inserting the needles for a patient's dialysis treatment?

- ☐ Never
- ☐ Rarely
- ☐ Sometimes
- ☐ Most of the Time
- ☐ Always
- ☐ I Don't Know

NDLSNLM

The last time you had difficulty inserting the needles for a patient's treatment, how many times did you try to insert the needles before either getting help or successfully inserting the needles?

(0 - 255)

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NDLSPOL

Does your center have a written procedure for what you should do if you are having difficulty inserting the needles for a patient's dialysis treatment?

- ☐ No
- ☐ Yes
- ☐ I Don't Know

NDLSPKN

How knowledgeable are the staff at your dialysis center about your center's procedures for what to do if a staff member is having difficulty inserting the needles for a patient's dialysis treatment?

- ☐ Not At All Knowledgeable
- ☐ Somewhat Knowledgeable
- ☐ Knowledgeable
- ☐ Very Knowledgeable
- ☐ I Don't Know

WASHHAN

In the past 3 months, did any staff member ever fail to wash his/her hands or change gloves before touching a patient's access site?

- ☐ No
- ☐ Yes
- ☐ I Don't Know

DURINGD

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In the past 3 months, how often did each of the following occur during a patient's dialysis treatment?

	Never	Rarely	Sometimes	Most of the Time	Always	I Don't Know
A patient's dialysis needles were inserted into the wrong access locations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
There was a problem with the flow of blood between a patient's access site and the dialysis machine	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The dialysis machine stopped before treatment was completed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A needle came out of the patient's access site before dialysis treatment was completed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The patient's blood started clotting during dialysis	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A patient had a reaction to dialysis treatment that required medical attention from a doctor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A patient's dialysis had to be stopped and the patient did not complete a full dialysis treatment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

ASSIST

When you need assistance with a problem during a patient's dialysis treatment visit, how difficult or easy is it for you to get help?

- ☐ Difficult
☐ Somewhat Difficult
☐ Somewhat Easy
☐ Easy
☐ I Don't Know

POSTDIA

In the past 3 months, how often did each of the following occur after a patient completed their dialysis treatment? (Check Only One in Each Row)

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	Never	Rarely	Sometimes	Most of the Time	Always	I Don't Know
A patient's access site was not bandaged properly	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A patient's blood would not clot	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A patient's blood pressure was not taken	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A patient's weight was not taken	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

FALLNUM

In the past 3 months, approximately how many patient falls occurred at your dialysis center?

(0 - 999)

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You indicated that {#fallnum} patient(s) fell at your center in the past 3 months. The number of different patients falling cannot be greater than the number of falls.

FALLDIF

In the past 3 months, approximately how many different patients fell at your dialysis center?

(0 - 255)

--	--	--

FALLRE

**The last time you saw a patient fall, what contributed to the patient's fall?
(Check All That Apply)**

- ☐ The patient was feeling dizzy or weak
- ☐ The patient was too fatigued to be walking
- ☐ The patient tripped on equipment or furniture
- ☐ The patient tripped walking up or down stairs
- ☐ The patient had to walk a long distance
- ☐ The patient slipped on a wet floor
- ☐ Staff did not provide enough assistance
- ☐ I Don't Know

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FALLFRE

In general, do patient falls occur occasionally among many different patients or repeatedly among a small number of patients?

- ☐ Occasionally among many different patients
☐ Repeatedly among a small number of patients
☐ I Don't Know

COMMDF

How difficult or easy is it for you to communicate with the patients at your dialysis center?

- ☐ Very Difficult
☐ Difficult
☐ Easy
☐ Very Easy

DISCFRE

In the past 3 months, how often did a patient discuss each of the following with you? (Check Only One in Each Row)

	Never	Rarely	Sometimes	Most of the Time	Always	I Don't Know
Patient concerns about a physical symptom he/she was having	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Patient concerns about safety at the center	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Patient concerns about a staff member at the center	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Patient personal problems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Patient difficulties performing tasks of daily living	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Patient concerns about his/her treatment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

MISTFRE

In the past 3 months, how often did a mistake occur during a patient's dialysis treatment visit?

- ☐ Never
☐ Rarely
☐ Sometimes
☐ Most of the Time
☐ Always

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- ☐ I Don't Know

MISTSER

The last time a mistake was made during a patient's dialysis treatment visit, how serious was the mistake?

- ☐ Not At All Serious
☐ Somewhat Serious
☐ Serious
☐ Very Serious
☐ I Don't Know

MISTRPT

If you make a medical mistake, how unlikely or likely are you to report that mistake?

- ☐ Unlikely
☐ Somewhat Unlikely
☐ Somewhat Likely
☐ Likely

MISTOBS

If you observe a medical mistake, how unlikely or likely are you to report that mistake?

- ☐ Unlikely
☐ Somewhat Unlikely
☐ Somewhat Likely
☐ Likely

MISTCNC

On a scale from 0 to 10, where 0 is Very Unlikely and 10 is Very Likely, how unlikely or likely is it that a medical mistake will be made that could harm a patient during their visit to your dialysis center?

- ☐ 0 - Very Unlikely
☐ 1
☐ 2
☐ 3
☐ 4
☐ 5
☐ 6
☐ 7
☐ 8
☐ 9
☐ 10 - Very Likely

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☐ I Don't Know

STMNTAG

To what extent do you disagree or agree with each of the following statements? (Check Only One in Each Row)

	Strongly Disagree	Disagree	Agree	Strongly Agree	I Don't Know
Staff always complete an event report when a medical error occurs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Staff are supported by management for reporting medical errors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Staff discuss ways to prevent medical errors from happening	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Information about medical errors is reviewed to identify and correct problems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
When a lot of work needs to be done, staff work together as a team to get the work done	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My workload interferes with my ability to ensure patient safety	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Staff are informed about causes of medical errors that happen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I believe I can make a difference with patient safety	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

NEDERRR

Most often, why do medical errors occur in your dialysis center? (Check All That Apply)

- ☐ Staff are not comfortable reporting medical errors
- ☐ Staff do not follow procedures
- ☐ Staff are not disciplined when they do not follow procedures
- ☐ Patients are difficult to work with
- ☐ The equipment breaks down
- ☐ We do not have the supplies we need
- ☐ We do not have a continuous quality improvement program
- ☐ We do not have enough staff to handle the workload
- ☐ Staff work too many hours
- ☐ Staff are not given the training they need

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☐ Other, please specify : _____

PSGRADE

Overall, what grade on patient safety would you give your dialysis center?

- ☐ A - Excellent
- ☐ B - Very good
- ☐ C - Acceptable
- ☐ D - Poor
- ☐ E - Failing

The last few questions ask about patient safety during and following natural disasters, such as a hurricane, snowstorm, or flooding. If your dialysis center was not affected by a natural disaster that disrupted services during the past year, you will be directed to the end of the survey.

NATDISA

During the past year, were dialysis treatment services in your dialysis center affected by a natural disaster, such as a hurricane, snow storm, or flooding?

- ☐ No
- ☐ Yes

WHATEVE

What single natural event most affected dialysis treatment services in your dialysis center during the past year?

- ☐ loss of electrical power
- ☐ flooding
- ☐ snow storm
- ☐ blizzard
- ☐ tornado
- ☐ wind storm
- ☐ Hurricane Katrina
- ☐ Hurricane Rita
- ☐ a hurricane other than Katrina or Rita
- ☐ Other, please specify : _____

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PREPARE

What did your center do to prepare for the {#WhatEve}? (Check All That Apply)

- ☐ We did not do anything
- ☐ We asked patients to come in for dialysis before the event
- ☐ We called patients to discuss their plans
- ☐ We prepared information packages for patients
- ☐ We delivered information packages to patients
- ☐ We obtained extra medical supplies
- ☐ We obtained extra water and food supplies
- ☐ We asked staff to stay at the center during the event
- ☐ We checked to make sure our generator was working
- ☐ Other, please specify : _____

TIMEAFT

For what period of time after the {#WhatEve} did each of the following occur in your medical or dialysis center? (Check Only One in Each Row)

	Did Not Occur	Less than 1 Week	Between 1 Week & 1 Month	Between 1 Month & 3 Months	More than 3 Months	I Don't Know
Dialysis treatments could not be provided at all	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
We were not able to provide dialysis treatment to all who needed it	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The length of individual dialysis treatments was shortened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Staff were working without sufficient food or drinking water	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Staff were unable to contact patients	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Most patients were unable to get to the dialysis center for treatment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Staff felt unsafe at the dialysis center	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
We had to rely on unlicensed personnel to help provide treatment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Health professionals

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from other locations joined our center to help provide medical services	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The number of equipment failures during dialysis treatments increased	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Supplies to mix dialysate solutions as prescribed were not available	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Staff did not have time to answer patient questions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Some patient medications were not available	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Some medical supplies were not available	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Information from patient records was not available	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

PREPHUC

What did your center do to prepare for {#WhatEve}? (Check All That Apply)

- ☐ We did not do anything
☐ We asked patients to come in for dialysis before the event
☐ We called patients to discuss their plans
☐ We prepared information packages for patients
☐ We delivered information packages to patients
☐ We obtained extra medical supplies
☐ We obtained extra water and food supplies
☐ We asked staff to stay at the center during the event
☐ We checked to make sure our generator was working
☐ Other, please specify : _____

TIMEAHUC

For what period of time after {#WhatEve} did each of the following occur in your medical or dialysis center? (Check Only One in Each Row)

	Did Not Occur	Less than 1 Week	Between 1 Week & 1 Month	Between 1 Month & 3 Months	More than 3 Months	I Don't Know
Dialysis treatments could not be provided at all	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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We were not able to provide dialysis treatment to all who needed it	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The length of individual dialysis treatments was shortened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Staff were working without sufficient food or drinking water	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Staff were unable to contact patients	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Most patients were unable to get to the dialysis center for treatment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Staff felt unsafe at the dialysis center	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
We had to rely on unlicensed personnel to help provide treatment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Health professionals from other locations joined our center to help provide medical services	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The number of equipment failures during dialysis treatments increased	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Supplies to mix dialysate solutions as prescribed were not available	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Staff did not have time to answer patient questions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Some patient medications were not available	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Some medical supplies were not available	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Information from patient records was not available	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Thank you for completing the Health and Safety Survey! Your

responses have been submitted.

USEEMAIL

May we use your email to notify you about survey results or the patient safety resources that will be developed based on survey findings?

- ☐ No
- ☐ Yes

APPENDIX B: RESPONSE FREQUENCIES AND GRAPHS

INCLUDED AS A SEPARATE FILE