ATTACHMENT A-2

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Hospital Survey on Patient Safety Culture: 2009 Comparative Database Report

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Executive Summary

In response to requests from hospitals interested in comparing their results to other hospitals on the *Hospital Survey on Patient Safety Culture*, the Agency for Healthcare Research and Quality (AHRQ) established the *Hospital Survey on Patient Safety Culture Comparative Database*. The first comparative database report was released in 2007 and was comprised of data from 382 U.S. hospitals that administered the AHRQ patient safety culture survey to 108,621 hospital staff and voluntarily submitted their data for inclusion in this new database. The second comparative database report was released in 2008 and was comprised of data from 519 hospitals that administered the survey to 160,176 hospital staff.

The *Hospital Survey on Patient Safety Culture 2009 Comparative Database Report* is an update of the 2008 report. The 2009 report includes more data, reporting results from a total of 622 hospitals and 196,462 hospital staff respondents. In addition, the 2009 report includes a chapter on trending that presents results showing change over time for 204 hospitals that administered the survey and submitted data more than once.

Because hospitals will not necessarily administer the hospital patient safety culture survey every single year, but may administer it on an 18-month, 24-month, or other administration cycle, the comparative database is a "rolling" benchmark that retains data from prior years when a hospital does not have new data to submit, replaces older data with more recent data when it is available, and adds new data from hospitals submitting for the first time. The comparative database report will be produced yearly through at least 2012.

This comparative database report was developed as a tool for the following purposes:

- ***Comparison***—To allow hospitals to compare their patient safety culture survey results to other hospitals.

- ***Assessment and Learning***—To provide data to hospitals to facilitate internal assessment and learning in the patient safety improvement process.

- ***Supplemental Information***—To provide supplemental information to help hospitals identify their strengths and areas with potential for improvement in patient safety culture.

- ***Trending***—To provide data that describe changes in patient safety culture over time.

Development of the Survey

The *Hospital Survey on Patient Safety Culture* was pilot tested, revised, and then released in November 2004. It was designed to assess hospital staff opinions about patient safety issues, medical error, and event reporting and includes 42 items that measure 12 areas or composites of patient safety culture, including:

1. Communication openness
2. Feedback and communication about error
3. Frequency of events reported
4. Handoffs and transitions
5. Management support for patient safety
6. Nonpunitive response to error
7. Organizational learning–Continuous improvement
8. Overall perceptions of patient safety
9. Staffing
10. Supervisor/manager expectations and actions promoting safety
11. Teamwork across units
12. Teamwork within units

The survey also includes two questions that ask respondents to provide an overall grade on patient safety for their work area/unit and to indicate the number of events they have reported over the past 12 months.

2009 Database Hospitals

The hospitals in the 2009 database fall into three categories:

- 395 hospitals from the previous database report that are still included in the 2009 report; of which
    - 314 hospitals submitted data one time; and
    - 81 hospitals submitted data twice, older data was replaced by data from their re-administration data so the database reflects their most recent survey data.
- 227 hospitals that submitted data for the 2009 report; of which
    - 104 hospitals submitted data for the first time; and
    - 123 hospitals submitted data from a re-administration of the survey; older data from these hospitals was replaced by data from their re-administration data so the database reflects their most recent survey data.

Survey Administration Statistics

- The average hospital response rate was 52 percent, with an average of 316 completed surveys per hospital.
- Most hospitals (44 percent) administered paper surveys, which resulted in higher response rates (58 percent) compared to web (45 percent) or mixed mode surveys (52 percent).

- Most hospitals (74 percent) administered the survey to all staff or a sample of all staff from all hospital departments.

Characteristics of Participating Hospitals

- Participating hospitals represent a range of bed sizes and geographic regions.
- Most hospitals are non-teaching (69 percent) and non-government owned (voluntary/non-profit or proprietary/investor owned) (78 percent).
- Overall, the characteristics of the 622 database hospitals are fairly consistent with the distribution of U.S. hospitals registered with the American Hospital Association (AHA).

Characteristics of Respondents

- There are 196,462 hospital staff respondents from 622 hospitals.
- One-third of respondents (33 percent) selected "Other" as their work area, followed by "Surgery" (10 percent), "Medicine" (9 percent), and "Many different hospital units/No specific unit" (8 percent).
- Over one-third of respondents (36 percent) selected "Registered Nurse" or "Licensed Vocational Nurse/Licensed Practical Nurse (LVN/LPN)" as their staff position, followed by "Other" (22 percent), and "Technician (e.g., EKG, Lab, Radiology)" (10 percent).
- Most respondents (77 percent) indicated they had direct interaction with patients.

Areas of Strength for Most Hospitals

Teamwork Within Units—The extent to which staff support one another, treat each other with respect, and work together as a team was the patient safety culture composite with the highest average percent positive response (79 percent), indicating this is an area of strength for most hospitals. The survey item with the highest average percent positive response (86 percent) was: "When a lot of work needs to be done quickly, we work together as a team to get the work done."

Patient Safety Grade—On average, the majority of respondents within hospitals (73 percent) gave their work area or unit a grade of either "A-Excellent" (25 percent) or "B-Very Good" (48 percent) on patient safety. However, there was a wide range of response in patient safety grades, from at least one hospital where none of the respondents (0 percent) provided their unit with a patient safety grade of "A-Excellent," to a hospital where 63 percent did.

Areas with Potential for Improvement for Most Hospitals

Nonpunitive Response to Error—The extent to which staff feel that their mistakes and event reports are not held against them and that mistakes are not kept in their personnel file was one of the two patient safety culture composites with the lowest average percent positive response (44 percent), indicating this is an area with potential for improvement for most hospitals. The survey

item with the lowest average percent positive response was: "Staff worry that mistakes they make are kept in their personnel file" (an average of only 35 percent).

Handoffs & Transitions—The extent to which important patient care information is transferred across hospital units and during shift changes was the other patient safety culture composite with the lowest average percent positive response (44 percent), indicating this is also an area with potential for improvement for most hospitals. The survey item with the lowest average percent positive response was: "Things 'fall between the cracks' when transferring patients from one unit to another" (an average of only 41 percent).

Number of Events Reported—On average, the majority of respondents within hospitals (52 percent) reported no events in their hospital over the past 12 months. It is likely that this represents under-reporting of events and was identified as an area for improvement for most hospitals because potential patient safety problems may not be recognized or identified and therefore may not be addressed. However, there was a wide range of responses in the number of events reported, from a hospital where 96 percent of respondents had not reported a single event over the past 12 months, to a hospital where only 5 percent had not reported an event.

Overall Results by Hospital Characteristics

Results on the survey's patient safety culture composites and items by hospital characteristics (bed size, teaching status, ownership and control, geographic region) are highlighted. A 5 percent difference in percent positive scores was used as a rule of thumb to identify meaningful differences in scores.

Bed Size

- Smaller hospitals (49 beds or fewer) had the highest average percent positive response on all 12 patient safety culture composites.
- The largest difference by bed size was on *Handoffs & Transitions* where the smallest hospitals (6-24 beds) scored 22 percent higher than large hospitals (400-499 beds) (55 percent compared to 33 percent positive).
- Large hospitals (400-499 beds) scored lowest on the percent of respondents who gave their work area/unit a patient safety grade of "Excellent" or "Very good" (64 percent for 400-499 beds compared to 78 percent for 25-49 beds).
- There were no noticeable differences on number of events reported based on bed size (all differences were 3 percent or less).

Teaching Status, and Ownership and Control

- Non-teaching hospitals had the highest average percent positive response on *Teamwork Across Units* and *Handoffs & Transitions*.
- Government-owned hospitals were more positive than non-government on *Handoffs & Transitions* (6 percent more positive), and *Staffing* (5 percent more positive).
- There were no noticeable differences on patient safety grade or number of events reported based on teaching status or ownership and control (all differences were 3 percent or less).

Geographic Region*

- East South Central hospitals had the highest average percent positive response across the 12 patient safety culture composites; Pacific hospitals had the lowest.
- The largest difference by region was on *Staffing* and *Handoffs & Transitions* where West North Central hospitals were 10 percent more positive than Mid Atlantic/New England hospitals (for *Staffing*) and Pacific hospitals (for *Handoffs & Transitions*).
- West South Central hospitals scored highest on the percent of respondents who gave their work area/unit a patient safety grade of "Excellent" or "Very good" (77 percent).
- Pacific hospitals had the highest percent of respondents who reported one or more events in the past year (53 percent); the lowest percent of respondents reporting events was in the West South Central region (40 percent).

Overall Results by Respondent Characteristics

Results on the survey's patient safety culture composites and items by respondent characteristics (work area/unit, staff position, interaction with patients) are highlighted. A 5 percent difference in percent positive scores was used as a rule of thumb to identify meaningful differences in scores.

Work Area/Unit

- Respondents in *Rehabilitation* had the highest average percent positive response on 8 of the 12 patient safety culture composites.
- The largest difference by work area/unit was on *Nonpunitive Response to Error* (22 percent). On this composite, *Rehabilitation* was 59 percent positive and *Emergency* was 37 percent positive.
- *Rehabilitation* had the highest percent of respondents who gave their work area/unit a patient safety grade of "Excellent" or "Very good" (81 percent); *Emergency* and *Medicine* had the lowest percent (62 percent).
- *ICU (any type)* had the highest percent of respondents reporting one or more events in the past year (66 percent); *Anesthesiology* had the lowest percent of respondents reporting events (43 percent).

Staff Position

- Respondents in *Administration/Management* had the highest average positive response on 11 of the 12 patient safety culture composites.

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* NOTE: States are categorized into AHA-defined regions as follows:

Mid Atlantic/New England: NY, NJ, PA, ME, NH, VT, MA, RI, CT
South Atlantic: DE, MD, DC, VA, WV, NC, SC, GA, FL
East North Central: OH, IN, IL, MI, WI
East South Central: KY, TN, AL, MS
West North Central: MN, IA, MO, ND, SD, NE, KS
West South Central: AR, LA, OK, TX
Mountain: MT, ID, WY, CO, NM, AZ, UT, NV
Pacific: WA, OR, CA, AK, HI

- The largest difference (26 percent) by staff position was on *Nonpunitive Response to Error; Administration/Management* was 62 percent positive and *Patient Care Assistants Aides/Care Partners* were 36 percent positive.
- *Administration/Management* had the highest percent of respondents who gave their work area/unit a patient safety grade of "Excellent" or "Very good" (82 percent); *Registered Nurse/LVN/LPN* had the lowest percent (66 percent).
- *Pharmacists* had the highest percent of respondents reporting one or more events in the past year (75 percent); *Unit Assistants/Clerks/Secretaries* had the lowest percent reporting events (22 percent).

Interaction with Patients

- Respondents *with* direct patient interaction were 7 percent more positive on *Handoffs & Transitions* compared to those *without* direct patient interaction (45 percent compared to 38 percent positive).
- Respondents *without* direct patient interaction were 7 percent more positive about *Management Support for Patient Safety* than those *with* direct patient interaction (76 percent compared to 69 percent positive).
- Respondents *without* direct patient interaction had the highest percent of respondents who gave their work area/unit a patient safety grade of "Excellent" or "Very good" (77 percent) compared to those *with* direct patient interaction (72 percent).
- More respondents *with* direct patient interaction reported one or more events in the past year (53 percent) than respondents *without* direct patient interaction (32 percent).

Trending: Comparing Results Over Time

Results regarding changes over time on the patient safety culture composites and items for the 204 hospitals (of the 622 total database hospitals) that administered the survey and submitted data more than once are highlighted. When comparing results over time, a 5 percent difference in percent positive scores between the previous and most recent survey administrations was used as a rule of thumb to identify meaningful changes in scores over time.

- For the 204 hospitals with trending data, the average length of time between previous and most recent survey administrations was 16 months (range: 7 months to 35 months).
- The average change in percent positive scores between administrations on the patient safety culture composites was a slight increase of 2 percent (ranging from 1 to 3 percent change).
- 37 percent of trending hospitals increased by 5 percent or more on *Overall Perceptions of Patient Safety*.
- 22 percent of hospitals decreased in percent positive scores by 5 percent or more on *Organizational Learning–Continuous Improvement*.
- There were no noticeable differences on changes to the percent of respondents who gave their work area/unit a patient safety grade of "A-Excellent" and "B-Very Good" (average percent increased by 4 percent).

- There were no noticeable differences on the number of events reported by respondents in the last 12 months (the average percent of respondents reporting one or more events increased by only 2 percent).

Additional Trending Analyses

Quantitative and qualitative data on changes in patient safety culture over time are highlighted. Quantitative data includes questionnaire data on actions taken by the trending hospitals to improve their patient safety culture, as well as correlational analyses of the actions taken with changes to *Hospital Survey on Patient Safety Culture (HSOPS)* scores. Qualitative data consists of findings from nine interviews conducted with trending hospital staff, who provided potential explanations for increases and decreases in their hospitals' HSOPS scores.

Trending Results by Hospital Characteristics

Results for the 204 trending hospitals regarding changes over time on the patient safety culture composites and items by hospital characteristics are highlighted. When comparing results over time, a 5 percent difference in percent positive scores between the previous and most recent survey administrations was used as a rule of thumb to identify meaningful changes in scores over time.

Trending: Bed Size

- Hospitals with 100-299 beds had the largest increases in percent positive response over time on 10 of the 12 patient safety culture composites (average increase across the 10 composites was 5 percent).
- Hospitals with 200-299 beds had the greatest average change across the 12 patient safety culture composites (average 5 percent change).
- The largest increase over time was for medium-large hospitals (200-299 beds) on *Teamwork Within Units* and *Organizational Learning—Continuous Improvement*, both increasing 8 percent from the previous administration.
- The largest decrease over time was for large hospitals (500 or more beds) on the *Overall Perceptions of Patient Safety*, decreasing 6 percent from the previous administration.
- Small hospitals (6-24 beds) had the highest increase in percent of respondents who gave their work area/unit a patient safety grade of "Excellent" or "Very good" (a 7 percent increase, from 71 percent in the previous administration to 78 percent in the most recent administration).
- Small hospitals (6-24 beds) also had the highest increase in percent of respondents reporting one or more events in the past year (a 6 percent increase, from 41 percent to 47 percent).

Trending: Teaching Status and Ownership and Control

- There were no noticeable differences or changes across the patient safety culture composites for teaching versus non-teaching hospitals or government-owned versus non-government hospitals (all changes and differences were 4 percent or less).

- Non-teaching hospitals had a greater increase than teaching hospitals in the percent of respondents who gave their work area/unit a patient safety grade of "Excellent" or "Very good" (a 5 percent increase, from 69 percent to 74 percent).
- Government-owned hospitals had a greater increase than non-government hospitals in the percent of respondents who gave their work area/unit a patient safety grade of "Excellent" or "Very good" (a 6 percent increase, from 69 percent to 75 percent).
- There were no noticeable differences or changes on the percent of respondents who reported one or more events in the past year based on teaching status.
- Government-owned hospitals had a greater increase than non-government hospitals in the percent of respondents who reported one or more events in the past year (a 5 percent increase, from 42 percent to 47 percent).

Trending Results by Respondent Characteristics

Results for the 204 trending hospitals regarding changes over time on the patient safety culture composites and items by respondent characteristics are highlighted. When comparing results over time, a 5 percent difference in percent positive scores between the previous and most recent survey administrations was used as a rule of thumb to identify meaningful changes in scores over time.

Trending: Work Area/Unit

- Respondents in *Psych/Mental Health* had the greatest average change in percent positive response across the 12 patient safety culture composites, with an average change of 5 percent.
- Respondents in *Obstetrics* had the largest increases in positive response over time on 5 of the 12 patient safety culture composites (average increase across the 5 composites was 6 percent).
- Respondents in *Anesthesiology* had the largest decreases in positive response over time on 4 of the 12 patient safety culture composites (average decrease across the 4 composites was 5 percent).
- *Medicine* had the largest average percent of respondents who increased over time in giving their work area/unit a patient safety grade of "Excellent" or "Very good" (an 8 percent increase from 56 to 64 percent), followed by *ICU* (7 percent increase), *Surgery* (6 percent increase), and *Lab* (5 percent increase).
- *Lab* had the largest average percent of respondents who increased over time in their reporting of one or more events in the past year (a 7 percent increase: from 48 to 55 percent) followed by *Anesthesiology*, *Radiology*, and *Rehabilitation* (all increasing by 5 percent); the largest decrease in percent reporting was in *Obstetrics* (a 6 percent decrease from 58 to 52 percent).

Trending: Staff Position

- *Pharmacists* had the largest increases in positive response over time on 4 of the 12 patient safety culture composites (average increase across the 4 composites was 6 percent).

- *Admin/Mgmt, RN/LVN/LPN, and Technicians* had the largest average percent of respondents who increased over time in giving their work area/unit a patient safety grade of "Excellent" or "Very good" (5 percent increases).
- There were no noticeable differences in the percent of respondents reporting one or more events over time based on staff position (all changes over time were less than +/- 5 percent).

Trending: Interaction with Patients

- There were no noticeable composite differences over time based on respondent interaction with patients (all were increases over time of 4 percent or less).
- There were no noticeable differences in the percent of respondents giving their work unit/area a patient safety grade of "Excellent" or "Very good" or those reporting one or more events over time based on respondent direct patient interaction.

Action Planning for Improvement

The delivery of survey results is not the *end point* in the survey process, it is just the *beginning.* It is often the case that the perceived failure of surveys to create lasting change is actually due to faulty or nonexistent action planning or survey follow-up. Seven steps of action planning are provided to give hospitals guidance on next steps to take to turn their survey results into actual patient safety culture improvement.

1. Understand your survey results
2. Communicate and discuss the survey results
3. Develop focused action plans
4. Communicate action plans and deliverables
5. Implement action plans
6. Track progress and evaluate impact
7. Share what works

Purpose and Use of This Report

In response to requests from hospitals interested in comparing their results to other hospitals on the *Hospital Survey on Patient Safety Culture*, the Agency for Healthcare Research and Quality (AHRQ) established the *Hospital Survey on Patient Safety Culture Comparative Database*. The first comparative database report was released in 2007 and was comprised of data from 382 U.S. hospitals that administered the AHRQ patient safety culture survey to 108,621 hospital staff and voluntarily submitted their data for inclusion in this new database. The second comparative database report was released in 2008 and was comprised of data from 519 hospitals that administered the survey to 160,176 hospital staff.

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Because hospitals will not necessarily administer the hospital patient safety culture survey every single year, but may administer it on an 18-month, 24-month, or other administration cycle, the comparative database is a "rolling" benchmark that retains data from prior years when a hospital does not have new data to submit, replaces older data with more recent data when it is available, and adds new data from hospitals submitting for the first time. The comparative database report will be produced yearly through at least 2012.

This comparative database report was developed as a tool for the following purposes:

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- ***Assessment and Learning***—To provide data to hospitals to facilitate internal assessment and learning in the patient safety improvement process.

- ***Supplemental Information***—To provide supplemental information to help hospitals identify their strengths and areas with potential for improvement in patient safety culture.

- ***Trending***—To provide data that describe changes in patient safety culture over time.

The report presents statistics (averages, standard deviations, minimum and maximum scores and percentiles) on the patient safety culture areas or composites assessed in the survey as well as the survey's items. In addition, the 2009 report includes a chapter on trending that describes patient safety culture change over time for the 204 hospitals that submitted data from their previous and most recent safety culture surveys.

Appendixes A and B present overall results by hospital characteristics (bed size, teaching status, ownership and control, geographic region) and respondent characteristics (hospital work area/unit, staff position, interaction with patients).

Appendix A—Results by Hospital Characteristics

- Bed size
- Teaching status
- Ownership and control
- Geographic region

Appendix B—Results by Respondent Characteristics

- Work area/unit
- Staff position
- Interaction with patients

Appendixes C and D show trends over time for the 204 hospitals that administered the survey and submitted data more than once. Average percent positive scores from the most recent and previous administrations are shown on the survey composites and items, broken down by hospital characteristics (bed size, teaching status, ownership and control) and respondent characteristics (hospital work area/unit, staff position, interaction with patients).

Appendix C—Trending Results by Hospital Characteristics

- Bed size
- Teaching status
- Ownership and control

Appendix D—Trending Results by Respondent Characteristics

- Work area/unit
- Staff position
- Interaction with patients

Note: Because there were fewer than 20 trending hospitals in several hospital geographic region breakout categories, trending results are not shown by hospital geographic region to ensure hospital confidentiality.

2009 Comparative Database Report

Chapter 1. Introduction

Patient safety is a critical component of healthcare quality. As healthcare organizations continually strive to improve, there is a growing recognition of the importance of establishing a culture of patient safety. Achieving a culture of patient safety requires an understanding of the values, beliefs, and norms about what is important in an organization and what attitudes and behaviors related to patient safety are supported, rewarded, and expected.

Development of the Survey

Recognizing the need for a measurement tool to assess the culture of patient safety in healthcare organizations, the Medical Errors Workgroup of the Quality Interagency Coordination Task Force (QuIC) sponsored the development of a hospital survey focusing on patient safety culture. Funded by the Agency for Healthcare Research and Quality (AHRQ), the *Hospital Survey on Patient Safety Culture* was developed under contract by Westat, a private research organization. To develop this patient safety culture assessment tool, a review of research pertaining to safety, patient safety, error and accidents, and error reporting was conducted, as well as an examination of existing published and unpublished safety culture assessment tools. In addition, hospital employees and administrators were interviewed to identify key patient safety and error reporting issues.

The survey was pilot tested, revised, and then released by AHRQ in November 2004. It was designed to assess hospital staff opinions about patient safety issues, medical error, and event reporting and includes 42 items that measure 12 areas or composites of patient safety culture. Each of the 12 patient safety culture composites is listed and defined in Table 1-1.

Table 1-1. Patient Safety Culture Composites and Definitions

Patient Safety Culture Composite	Definition: *The extent to which….*
1. Communication openness	Staff freely speak up if they see something that may negatively affect a patient, and feel free to question those with more authority
2. Feedback & communication about error	Staff are informed about errors that happen, given feedback about changes implemented, and discuss ways to prevent errors
3. Frequency of events reported	Mistakes of the following types are reported: 1) mistakes caught and corrected before affecting the patient, 2) mistakes with no potential to harm the patient, and 3) mistakes that could harm the patient, but do not
4. Handoffs & transitions	Important patient care information is transferred across hospital units and during shift changes
5. Management support for patient safety	Hospital management provides a work climate that promotes patient safety and shows that patient safety is a top priority
6. Nonpunitive response to error	Staff feel that their mistakes and event reports are not held against them, and that mistakes are not kept in their personnel file

Table 1-1. Patient Safety Culture Composites and Definitions, continued

Patient Safety Culture Composite	Definition: *The extent to which….*
7. Organizational learning–Continuous improvement	There is a learning culture in which mistakes lead to positive changes and changes are evaluated for effectiveness
8. Overall perceptions of patient safety	Procedures and systems are good at preventing errors and there is a lack of patient safety problems
9. Staffing	There are enough staff to handle the workload and work hours are appropriate to provide the best care for patients
10. Supervisor/manager expectations and actions promoting safety	Supervisors/managers consider staff suggestions for improving patient safety, praise staff for following patient safety procedures, and do not overlook patient safety problems
11. Teamwork across units	Hospital units cooperate and coordinate with one another to provide the best care for patients
12. Teamwork within units	Staff support one another, treat each other with respect, and work together as a team

The survey also includes two questions that ask respondents to provide an overall grade on patient safety for their work area/unit and to indicate the number of events they have reported over the past 12 months. In addition, respondents are asked to provide limited background demographic information about themselves (their work area/unit, staff position, whether they have direct interaction with patients, etc). The survey's toolkit materials are available from the AHRQ web site (www.ahrq.gov/qual/hospculture) and include the survey, survey items and dimensions, Hospital Survey User's guide, Hospital Survey Feedback Report Template, information about acquiring the Microsoft Excel™ Data Entry and Analysis Tool, an article about safety culture assessment, and a series of three national technical assistance conference calls. The toolkit provides hospitals with the basic knowledge and tools needed to conduct a patient safety culture assessment and ideas regarding how to use the data.

The 2009 Comparative Database and Report

Since its release, the *Hospital Survey on Patient Safety Culture* has been widely implemented across the U.S. hospitals administering the survey have expressed interest in comparing their survey results against other hospitals as an additional source of information to help them identify areas of strength and areas for patient safety culture improvement. In response to these requests, AHRQ funded the *Hospital Survey on Patient Safety Culture Comparative Database* to enable hospitals to compare their most recent survey results against other hospitals and to examine trends in patient safety culture over time. Hospitals interested in submitting to the database should go to the AHRQ web site for more information (www.ahrq.gov/qual/hospculture).

What is new in the 2009 Comparative Database Report?

The *Hospital Survey on Patient Safety Culture 2009 Comparative Database Report* is an update of the 2008 report, presenting the most current benchmarking data and trending data available. The 2009 report contains 204 hospitals that submitted data to the comparative database more than once, which provides substantially more data to analyze trends in patient safety culture over time. On average, hospitals show small increases in the patient safety culture

composites and survey items over time. The average increase in composite scores across the 204 trending hospitals is 2 percent (ranging from 1 percent to 3 percent).

In addition to being an update of the 2008 report, the 2009 report contains several new types of data not previously reported. Chapter 7 presents quantitative and qualitative data on changes in patient safety culture over time. The quantitative data includes questionnaire data on actions taken by the 2009 trending hospitals to improve their patient safety culture, as well as correlational analyses of the actions taken with changes to *Hospital Survey on Patient Safety Culture (HSOPS)* scores. The qualitative data consists of findings from nine interviews conducted with trending hospital staff and suggest explanations for increases and decreases in hospitals' HSOPS scores.

Finally, there are now enough trending hospitals to present trending results by hospital characteristics (bed size, teaching status, ownership and control), as well as respondent characteristics (work area/unit, staff position, interaction with patients). These breakouts are presented in Appendixes C and D.

Data Limitations

The survey results presented in this report represent the largest compilation of data from the *Hospital Survey on Patient Safety Culture* currently available, and therefore provide a useful reference for comparison. However, there are several limitations to these data that should be kept in mind.

First, the hospitals that submitted data to the database are not a statistically selected sample of all U.S. hospitals since only hospitals that administered the survey on their own and were willing to submit their data for inclusion in the database are represented. However, the characteristics of the database hospitals are fairly consistent with the distribution of U.S. hospitals registered with the American Hospital Association (AHA) and are described further in Chapter 3.

Second, hospitals that administered the survey were not required to undergo any training and administered it in different ways. Some hospitals used a paper-only survey, others used web-only, and others used a combination of these two methods to collect the data. It is possible that these different modes could lead to differences in survey responses; further research is needed to determine if there are mode effects that affect the results. In addition, some hospitals conducted a census, surveying all hospital staff, while others administered the survey to a sample of staff. In cases in which a sample was drawn, no data were obtained to determine the methodology used to draw the sample. Survey administration statistics that were obtained about the database hospitals, such as survey administration modes and response rates, are provided in Chapter 2.

Finally, while the data submitted by hospitals have been cleaned for out-of-range values (e.g., invalid response values due to data entry errors) and blank records (where responses to all survey items were missing), as well as some logic checks, we have otherwise presented the data as submitted. We have not made any additional attempts to verify or audit the accuracy of the data submitted by the hospitals.

Chapter 2. Survey Administration Statistics

This chapter presents descriptive information on the 2009 database hospitals regarding how they conducted survey administration.

Highlights

- The 2009 database consists of data from 196,462 hospital staff respondents across 622 participating hospitals.
- The average hospital response rate was 52 percent, with an average of 316 completed surveys per hospital.
- Most hospitals (44 percent) administered paper surveys, which resulted in higher response rates (58 percent) compared to web (45 percent) or mixed mode surveys (52 percent).
- Most hospitals (74 percent) administered the survey to all staff or a sample of all staff from all hospital departments.

The 2009 database consists of survey data from 622 hospitals with a total of 196,462 hospital staff respondents. Participating hospitals administered the *Hospital Survey on Patient Safety Culture* to their hospital staff between October 2004 and July 2008 and voluntarily submitted their data for inclusion in the database.

Because hospitals do not necessarily administer the hospital patient safety culture survey every single year, but may administer it on an 18-month, 24-month, or other administration cycle, the comparative database is a "rolling" benchmark. Data from prior years is retained in the database when a hospital does not have new data to submit; older data is replaced with more recent data when it is available; and new data is added from hospitals submitting for the first time.

Overall statistics for the hospitals included in the 2009 database are shown in Table 2-1, broken down according to when the data were submitted. The 2009 database includes 395 hospitals carried over from the 2008 report and new data submissions from 227 hospitals. Of the 395 hospital submissions carried over from the 2008 database, 314 hospitals submitted data only once, and 81 hospitals submitted data more than once. Of the 227 new hospital submissions, 104 hospitals submitted data for the first time, and 123 hospitals submitted new data based on a re-administration of the survey. Old data from hospitals that submitted more than once was replaced by data from their re-administration so the database reflects their most recent survey data.

Table 2-1. Overall Statistics for the 2009 Database Participating Hospitals

	Previous Submissions (H=395) (Included in prior database reports)		New Submissions (H=227) (New data for the 2009 report)		
Overall Statistic	**First time submissions (Submitted once)**	**Resubmissions (Submitted more than once)**	**First time submissions (Submitted once)**	**Resubmissions (Submitted more than once)**	**Total 2009 Database**
Number of hospitals	314	81	104	123	622
Number of individual survey respondents	94,825	9,717	32,096	59,824	196,462

For the 2009 database overall, an average of 316 completed surveys were submitted per hospital (range: 11 to 3,908 surveys), and an average of 833 surveys were administered per hospital (range: 15 to 11,269), with an average hospital response rate of 52 percent (range: 4 to 100 percent) (see Table 2-2).

Table 2-2. Summary Statistics for 2009 Database Participating Hospitals

Average Number of completed surveys per hospital (range: 11 to 3,908)	316
Average Number of surveys administered per hospital (range: 15 to 11,269)	833
Average hospital response rate (range: 4% to 100%)	52%

Most hospitals administered only paper surveys (44 percent), followed by web (33 percent) and mixed mode administrations involving both paper and web surveys (23 percent) (see Table 2-3).

Table 2-3. Survey Administration Statistics

Survey Administration Mode	2009 Database Hospitals		2009 Database Respondents	
	Number	**Percent**	**Number**	**Percent**
Paper only	276	44%	53,293	27%
Web only	206	33%	78,184	40%
Both paper and web	140	23%	64,985	33%
TOTAL	622	100%	196,462	100%

As shown in Table 2-4, paper survey administrations received a considerably higher average response rate (58 percent) than web (45 percent) or mixed mode administrations (52 percent). It is therefore still an overall recommendation that hospitals conduct the *Hospital Survey on Patient Safety Culture* as a paper survey, but each hospital should take into consideration its own prior experience with survey modes and response rates when determining which mode is best.

Table 2-4. Average Hospital Response Rate by Mode

Survey Administration Mode	Average Hospital Response Rate
Paper only	58%
Web only	45%
Both web and paper	52%

Most hospitals (463 or 74 percent) administered the survey to a census of all hospital staff, or a sample of staff, from all hospital work areas/units; fewer hospitals (105 or 17 percent) administered the survey to a subset of selected staff or work areas/units; and 54 hospitals (9 percent) administered the survey to a subset of selected staff and selected work areas/units (see Table 2-5). Twelve hospitals did not administer the entire survey; they excluded one or more of the non-demographic survey items. Those 12 hospitals were excluded from composite calculations if they omitted one or more of the items within a particular composite, but were included in item-level calculations for those items they retained.

Table 2-5. Types of Staff or Work Areas/Units Surveyed

Types of Staff or Work Areas/Units Surveyed	2009 Database Hospitals		2009 Database Respondents	
	Number	Percent	Number	Percent
All staff, or a sample of all staff, from all work areas/units	463	74%	152,594	78%
Selected staff only	79	13%	16,741	9%
Selected work areas/units only	26	4%	4,851	2%
Selected staff and selected work areas/units	54	9%	22,276	11%
TOTAL	622	100%	196,462	100%

Chapter 3. Characteristics of Participating Hospitals

As background for understanding the survey results, this chapter presents information about the distribution of database hospitals by bed size, teaching status, ownership and control, and geographic region. Although the hospitals that voluntarily submitted data to the database do not constitute a statistically selected sample, the characteristics of these hospitals are fairly consistent with the distribution of U.S. hospitals registered with the American Hospital Association (AHA). The characteristics of database hospitals by AHA-defined categories of bed size, teaching status, ownership and control, and geographic region are presented in the following tables.[1] Database hospitals and survey respondents are described, as well as the distribution of U.S. AHA-registered hospitals included in the 2006 AHA Annual Survey of Hospitals.[2]

Highlights

- Participating hospitals represent a range of bed sizes and geographic regions.
- Most hospitals are non-teaching (69 percent) and non-government owned (voluntary/non-profit or proprietary/investor owned) (78 percent).
- Overall, the characteristics of the 622 database hospitals are fairly consistent with the distribution of U.S. hospitals registered with the American Hospital Association (AHA).

Bed Size

Table 3-1 shows the distribution of database hospitals and respondents by hospital bed size. Overall, the distribution of database hospitals by bed size is similar to the distribution of AHA-registered U.S. hospitals. Similar to the AHA-registered U.S. hospitals, the largest group of database hospitals (139 hospitals or 22 percent) fall in the bed size category of 25 to 49 beds. The majority of the database hospitals (421 hospitals or 68 percent) have fewer than 200 beds, which is similar to the percentage of AHA-registered U.S. hospitals (74 percent).

It is important to note that while smaller hospitals are more prevalent in the database, they account for fewer respondents than larger hospitals. Hospitals with fewer than 200 beds account for only 32 percent of all database respondents (61,434 respondents), whereas hospitals with 200 or more beds account for over twice as many respondents (135,028 respondents or 69 percent).

[1] To ensure hospital confidentiality, a rule was established requiring at least 20 hospitals to be in a particular breakout category before data would be displayed by that category. Therefore, some of the standard AHA categories have been combined. In addition, column percent totals in the tables may not sum to exactly 100% due to rounding of decimals.

[2] Data for AHA-registered hospitals were obtained from the 2006 AHA Annual Survey of Hospitals Database, © 2007 Health Forum, LLC, an affiliate of the American Hospital Association. Hospitals not registered with the AHA were asked to provide information on their hospital's characteristics such as bed size, teaching status, etc.

Table 3-1. Distribution of Database Hospitals and Respondents by Bed Size (Compared to AHA-registered U.S. Hospitals)

Bed Size	AHA-registered U.S. Hospitals		2009 Database Hospitals		2009 Database Respondents	
	Number	Percent	Number	Percent	Number	Percent
6-24 beds	607	10%	60	10%	3,703	2%
25-49 beds	1,374	22%	139	22%	13,426	7%
50-99 beds	1,329	21%	111	18%	15,766	8%
100-199 beds	1,341	21%	111	18%	28,539	15%
200-299 beds	704	11%	74	12%	31,990	16%
300-399 beds	402	6%	55	9%	35,153	18%
400-499 beds	205	3%	23	4%	14,636	7%
500 or more beds	318	5%	49	8%	53,249	27%
TOTAL	6,280	100%	622	100%	196,462	100%

Teaching Status

As shown in Table 3-2, most database hospitals were non-teaching (69 percent), which compares closely to the distribution of AHA-registered U.S. hospitals.

Table 3-2. Distribution of Database Hospitals and Respondents by Teaching Status (Compared to AHA-registered U.S. Hospitals)

Teaching Status	AHA-registered U.S. Hospitals		2009 Database Hospitals		2009 Database Respondents	
	Number	Percent	Number	Percent	Number	Percent
Teaching	1,442	23%	190	31%	94,772	48%
Non-Teaching	4,838	77%	432	69%	101,690	52%
TOTAL	6,280	100%	622	100%	196,462	100%

Ownership and Control

The distribution of database hospitals and respondents by government versus non-government ownership and control is shown in Table 3-3. Most database hospitals (78 percent) are non-government owned and controlled (i.e., voluntary/non-profit or proprietary/investor owned). The distribution of database hospitals closely matches the distribution of AHA-registered U.S. hospitals in terms of the percentages of government and non-government hospitals.

Table 3-3. Distribution of Database Hospitals and Respondents by Ownership and Control (Compared to AHA-registered U.S. Hospitals)

Ownership and Control	AHA-registered U.S. Hospitals		2009 Database Hospitals		2009 Database Respondents	
	Number	Percent	Number	Percent	Number	Percent
Government (federal or non-federal)	1,645	26%	139	22%	20,837	11%
Non-Government (voluntary/non-profit or proprietary/investor owned)	4,635	74%	483	78%	175,625	89%
TOTAL	6,280	100%	622	100%	196,462	100%

Geographic Region

Table 3-4 shows the distribution of database hospitals by AHA-defined geographic regions. The largest percentages of database hospitals are from the East North Central region (27 percent) followed by the South Atlantic and West North Central regions (17 percent each). The database distribution under-represents Mid Atlantic/New England and West South Central hospitals, and over-represents the East North Central and West North Central hospitals compared to the distribution of AHA-registered U.S. hospitals.

Table 3-4. Distribution of Database Hospitals and Respondents by Geographic Region (Compared to AHA-registered U.S. Hospitals)

Region	AHA-registered U.S. Hospitals		2009 Database Hospitals		2009 Database Respondents	
	Number	Percent	Number	Percent	Number	Percent
Mid Atlantic/New England	878	14%	37	6%	20,546	10%
South Atlantic	963	15%	104	17%	36,825	19%
East North Central	905	14%	165	27%	54,909	28%
East South Central	534	9%	34	5%	8,978	5%
West North Central	794	13%	104	17%	20,986	11%
West South Central	1,063	17%	45	7%	13,242	7%
Mountain	484	8%	58	9%	17,264	9%
Pacific	659	10%	75	12%	23,712	12%
TOTAL	6,280	100%	622	100%	196,462	100%

NOTE: States are categorized into AHA-defined regions as follows:

Mid Atlantic/New England: NY, NJ, PA, ME, NH, VT, MA, RI, CT
South Atlantic: DE, MD, DC, VA, WV, NC, SC, GA, FL
East North Central: OH, IN, IL, MI, WI
East South Central: KY, TN, AL, MS
West North Central: MN, IA, MO, ND, SD, NE, KS
West South Central: AR, LA, OK, TX
Mountain: MT, ID, WY, CO, NM, AZ, UT, NV
Pacific: WA, OR, CA, AK, HI

Chapter 4. Characteristics of Respondents

This chapter presents information describing the respondents within the participating hospitals. The data presented here are based on respondents' answers to survey questions that asked them to indicate the hospital work area/unit where they spend most of their work time, their staff position, and whether they typically have direct interaction with patients. In the tables presented in this chapter, respondents from hospitals that omitted one of these questions, or those who did not respond, are shown as missing in the tables and are excluded from total percentages.

Highlights

- There are 196,462 hospital staff respondents from 622 hospitals.
- One-third of respondents (33 percent) selected "Other" as their work area, followed by "Surgery" (10 percent), "Medicine" (9 percent), and "Many different hospital units/No specific unit" (8 percent).
- Over one-third of respondents (36 percent) selected "Registered Nurse" or "Licensed Vocational Nurse/Licensed Practical Nurse (LVN/LPN)" as their staff position, followed by "Other" (22 percent), and "Technician (e.g., EKG, Lab, Radiology)" (10 percent).
- Most respondents (77 percent) indicated they had direct interaction with patients.

Work Area/Unit

One-third of respondents (33 percent) selected "Other" as their work area, followed by "Surgery" (10 percent), "Medicine" (9 percent), and "Many different hospital units/No specific unit" (8 percent) (see Table 4-1). Because the *Hospital Survey on Patient Safety Culture* uses generic categories for hospital work areas and units, it appears that a large percentage of respondents chose the "Other" response option that allowed them to specify the name of their specific work area or unit. Participating hospitals were not asked to submit written or other-specify responses for any questions so no data are available to further describe the respondents in the "Other" work area category.

Table 4-1. Distribution of Database Respondents by Work Area/Unit

Work Area/Unit	2009 Database Respondents	
	Number	Percent
Other	60,617	33%
Surgery	17,393	10%
Medicine	17,143	9%
Many different hospital units/No specific unit	14,428	8%
Intensive care unit (any type)	12,040	7%
Radiology	10,528	6%
Emergency	9,703	5%
Laboratory	9,273	5%
Obstetrics	8,088	4%
Rehabilitation	7,429	4%
Pharmacy	5,226	3%
Pediatrics	4,534	2%
Psychiatry/mental health	4,298	2%
Anesthesiology	1,184	1%
TOTAL	181,884	100%
Missing: Did not answer or were not asked the question	14,578	
Overall total	196,462	

Staff Position

Over one-third of respondents (36 percent) selected "Registered Nurse" or "Licensed Vocational Nurse/Licensed Practical Nurse (LVN/LPN)" as their staff position, followed by "Other" (22 percent), and "Technician (e.g., EKG, Lab, Radiology)" (10 percent) (see Table 4-2). Similar to the work area/unit question, many respondents chose the "Other" response option that allowed them to specify their specific staff position, but no data are available to further describe the respondents in the "Other" staff position category.

Table 4-2. Distribution of Database Respondents by Staff Position

Staff Position	2009 Database Respondents	
	Number	Percent
Registered Nurse (RN) or Licensed Vocational Nurse (LVN)/ Licensed Practical Nurse (LPN)	66,261	36%
Other	40,839	22%
Technician (EKG, Lab, Radiology)	19,230	10%
Administration/Management	13,750	7%
Unit Assistant/Clerk/Secretary	11,914	6%
Patient Care Asst/Hospital Aide/Care Partner	10,386	6%
Therapists (Respiratory, Physical, Occupational or Speech)	9,026	5%
Attending/Staff Physician, Resident Physician/ Physician in Training, or Physician Assistant (PA)/Nurse Practitioner (NP)	8,084	4%
Pharmacist	3,123	2%
Dietician	1,195	1%
TOTAL	183,808	100%
Missing: Did not answer or were not asked the question	12,654	
Overall total	196,462	

Interaction with Patients

The survey asked respondents whether they typically have direct interaction or contact with patients. As shown in Table 4-3, most respondents (77 percent) indicated "yes," they had direct interaction with patients.

Table 4-3. Distribution of Database Respondents by Interaction with Patients

Interaction With Patients	2009 Database Respondents	
	Number	Percent
YES, have direct patient interaction	143,052	77%
NO, do NOT have direct patient interaction	43,658	23%
TOTAL	186,710	100%
Missing: Did not answer or were not asked the question	9,752	
Overall total	196,462	

Chapter 5. Overall Results

As noted in Chapter 1, the *Hospital Survey on Patient Safety Culture* assesses hospital staff opinions about patient safety issues, medical error, and event reporting and consists of 42 items that measure 12 areas or composites of patient safety culture (plus two questions on patient safety grade and number of events reported). This chapter presents the overall survey results for the database, showing the average percent of positive response across the database hospitals on each of the survey's items and composites.

Highlights

- *Teamwork Within Units*—the extent to which staff support one another, treat each other with respect, and work together as a team was the patient safety culture composite with the highest average percent positive response (79 percent), indicating this is an area of strength for most hospitals.
  - The survey item with the highest average percent positive response was: "When a lot of work needs to be done quickly, we work together as a team to get the work done". An average of 86 percent strongly agreed or agreed with this item.
- *Nonpunitive Response to Error*—the extent to which staff feel that their mistakes and event reports are not held against them, and that mistakes are not kept in their personnel file—was one of the two patient safety culture composites with the lowest average percent positive response (44 percent), indicating this is an area with potential for improvement for most hospitals.
  - The survey item with the lowest average percent positive response was: "Staff worry that mistakes they make are kept in their personnel file". An average of only 35 percent strongly disagreed or disagreed with this item.
- *Handoffs & Transitions*—the extent to which important patient care information is transferred across hospital units and during shift changes—was the other patient safety culture composite with the lowest average percent positive response (44 percent), indicating this is also an area with potential for improvement for most hospitals.
  - The survey item with the lowest average percent positive response was: "Things 'fall between the cracks' when transferring patients from one unit to another". An average of only 41 percent strongly disagreed or disagreed with this item.
- On average, the majority of respondents within hospitals (73 percent) gave their work area or unit a grade of "A-Excellent" (25 percent) or "B-Very Good" (48 percent) on patient safety; this was identified as an area of strength for most hospitals.
- On average, the majority of respondents within hospitals (52 percent) reported no events in their hospital over the past 12 months. It is likely that this represents under-reporting of events and was identified as an area for improvement for most hospitals.

Reporting the average across hospitals ensures that each hospital receives an equal weight that contributes to the overall average. Reporting the data at the hospital level in this way is important because culture is considered to be a group or hospital characteristic and is not considered to be a solely individual characteristic. An alternative method would be to report a straight percent of positive responses across all respondents, but this method would give greater weight to respondents from larger hospitals since there are almost twice as many respondents from larger hospitals as those from smaller hospitals (as noted in Chapter 3).

Calculation of Percent Positive Scores

Most of the survey's items ask respondents to answer using 5-point response categories in terms of agreement (Strongly agree, Agree, Neither, Disagree, Strongly disagree) or frequency (Always, Most of the time, Sometimes, Rarely, Never). Three of the 12 patient safety culture composites use the frequency response option (*Feedback and Communication About Error*, *Communication Openness*, and *Frequency of Events Reported*) while the other nine composites use the agreement response option.

Item-level Percent Positive Response

Both positively worded items (such as "People support one another in this work area") and negatively worded items (such as "We have patient safety problems in this work area") are included in the survey. Calculating the percent positive response on an item is different for positively and negatively worded items:

- **For positively worded items**, percent positive response is the combined percentage of respondents within a hospital who answered "Strongly agree" or "Agree," or "Always" or "Most of the time," depending on the response categories used for the item.

  For example, for the item "People support one another in this work area," if 50 percent of respondents within a hospital *Strongly agree* and 25 percent *Agree*, the item-level percent positive response for that hospital would be 50% + 25%= 75% positive.

- **For negatively worded items**, percent positive response is the combined percentage of respondents within a hospital who answered "Strongly disagree" or "Disagree," or "Never" or "Rarely," because a <u>negative</u> answer on a negatively worded item indicates a <u>positive</u> response.

  For example, for the item "We have patient safety problems in this work area," if 60 percent of respondents within a hospital S*trongly disagree* and 20 percent *Disagree*, the item-level percent positive response would be 80 percent positive (i.e., 80 percent of respondents <u>do not</u> believe they have patient safety problems in their work area).

Composite-level Percent Positive Response

The survey's 42 items measure 12 areas or composites of patient safety culture. Each of the 12 patient safety culture composites includes 3 or 4 survey items. Composite scores were calculated for each hospital by averaging the percent positive response on the items within a composite. For example, for a 3-item composite, if the item-level percent positive responses were 50 percent, 55 percent, and 60 percent, the hospital's composite-level percent positive response would be the average of these three percentages or 55% positive.[3]

Overall Results: Composite and Item-level Charts

Composite-level Results

The composite-level results in Chart 5-1 show the average percent positive response for each of the 12 patient safety culture composites, across all hospitals in the database. By displaying the percent positive as an average across hospitals, each hospital's composite score is weighted equally. The patient safety culture composites are shown in order from the highest average percent positive response to the lowest.

Teamwork Within Units—the extent to which staff support one another, treat each other with respect, and work together as a team—was the patient safety culture composite with the highest average percent positive response (79 percent), indicating this to be an area of strength across the database hospitals (see Chart 5-1).

Nonpunitive Response to Error—the extent to which staff feel that event reports and their own mistakes are not held against them, and that mistakes are not kept in their personnel file—was one of the two patient safety culture composites with the lowest average percent positive response (44 percent), indicating this is an area with potential for improvement across the database hospitals (see Chart 5-1).

Handoffs & Transitions—the extent to which important patient care information is transferred across hospital units and during shift changes—was the other patient safety culture composite with the lowest average percent positive response (44 percent), indicating this is also an area with potential for improvement for most hospitals (see Chart 5-1).

Item-level Results

The item-level results in Chart 5-2 (over 4 pages) show the average percent positive response for each of the 42 survey items. The survey items are grouped by the patient safety culture composite they are intended to measure. Within each composite, the items are presented in the order in which they appear in the survey. The survey item with the highest average percent positive response (86 percent) was from the patient safety culture composite *Teamwork Within*

[3] Note that this method for calculating composite scores is slightly different than the method described in the September 2004 Survey User's Guide that is part of the original survey toolkit materials on the AHRQ web site. The guide advises computing composites by calculating the overall percent positive across all the items within a composite. The updated recommendation included in this report is to compute item percent positive scores first, and then average the item percent positive scores to obtain the composite score, which gives equal weight to each item in a composite. The Survey User's Guide will eventually be updated to reflect this slight change in methodology.

Units: "When a lot of work needs to be done quickly, we work together as a team to get the work done." The survey item with the lowest average percent positive response (35 percent) was from the patient safety culture composite *Nonpunitive Response to Error*: "Staff worry that mistakes they make are kept in their personnel file," (that is, an average of only 35 percent of respondents in each hospital *Strongly disagreed* or *Disagreed* with this negatively worded item).

Results from the item that asked respondents to give their hospital work area/unit an overall grade on patient safety are shown in Chart 5-3. The chart shows the average percent of respondents within each hospital providing grades from "A-Excellent" to "E-Failing." On average across hospitals, most respondents were positive with 73 percent giving their work area or unit a patient safety grade of "A-Excellent" (25 percent) or "B-Very Good" (48 percent). Very few (5 percent) gave their work area/unit a "Poor" (4 percent) or "Failing" (1 percent) grade.

Results from the item that asked respondents to indicate the number of events they had reported over the past 12 months are shown in Chart 5-4. The chart shows the average percent of respondents within each hospital who indicated they reported "No event reports" up to "21 or more event reports." On average across hospitals, the majority of respondents (52 percent) reported no events in their hospital over the past 12 months. It is likely that this represents under-reporting and was identified as an area for improvement for most hospitals because potential patient safety problems may not be recognized or identified and therefore may not be addressed.

Chart 5-1. Composite-level Average Percent Positive Response—Across All 2009 Database Hospitals

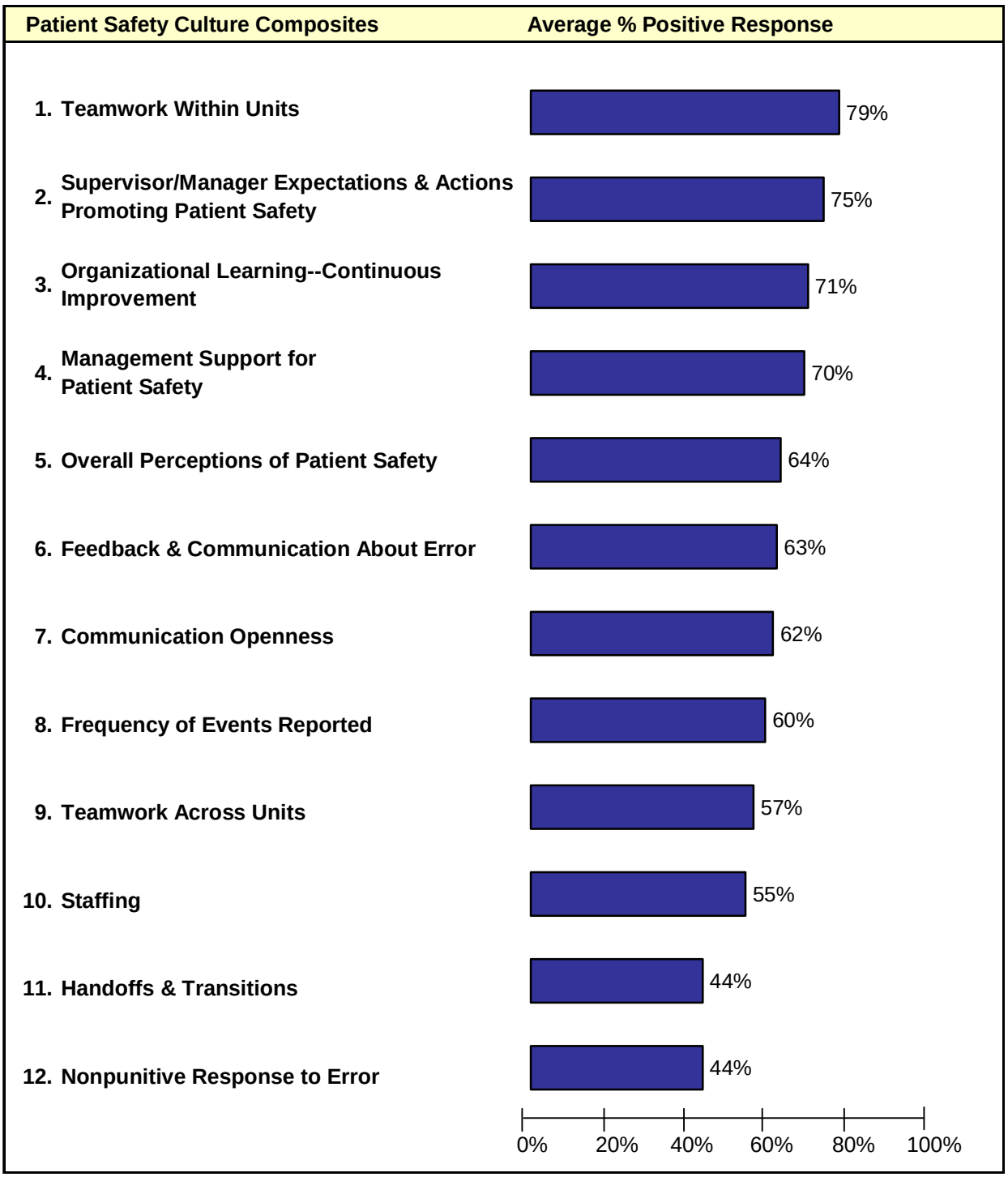
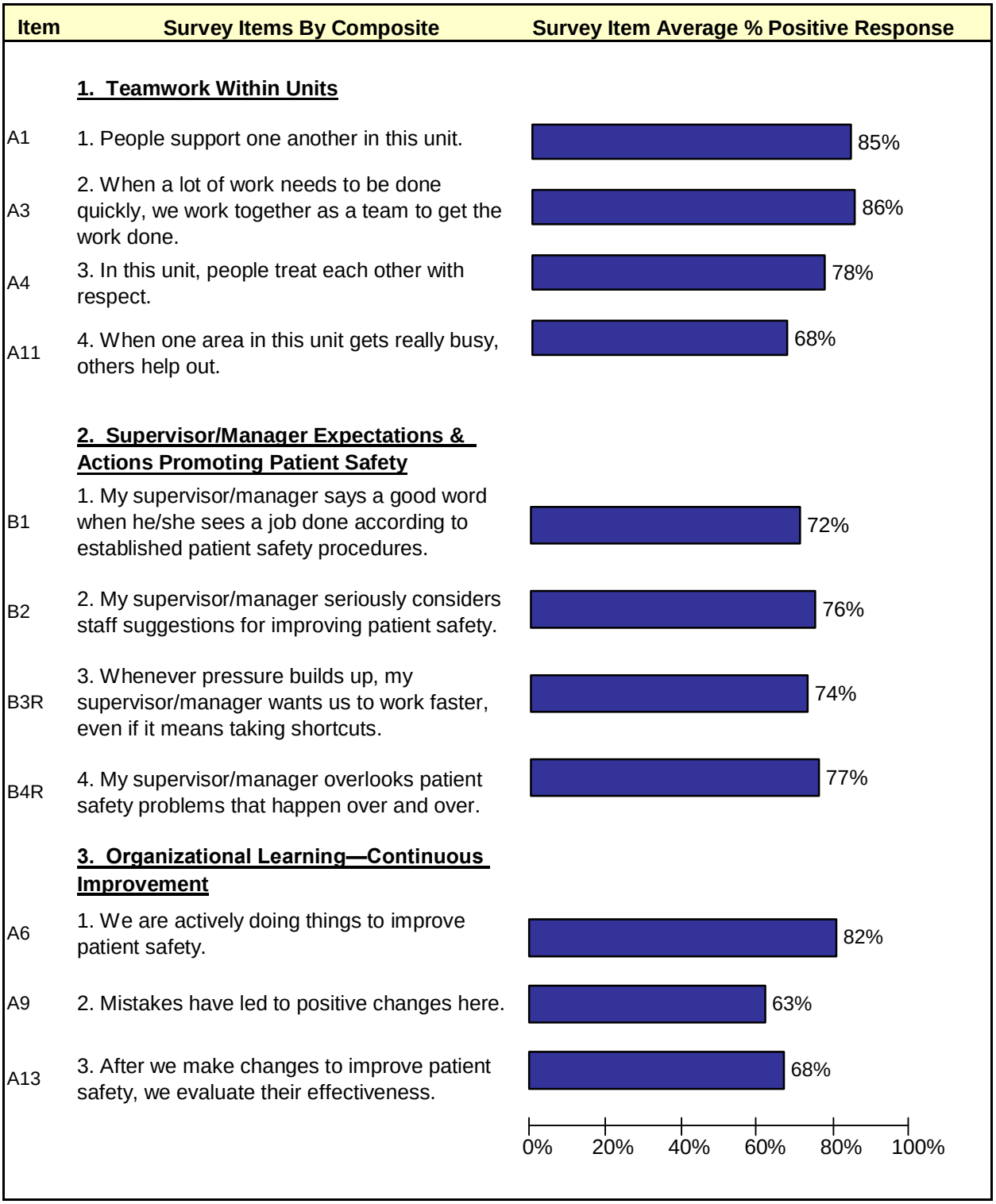
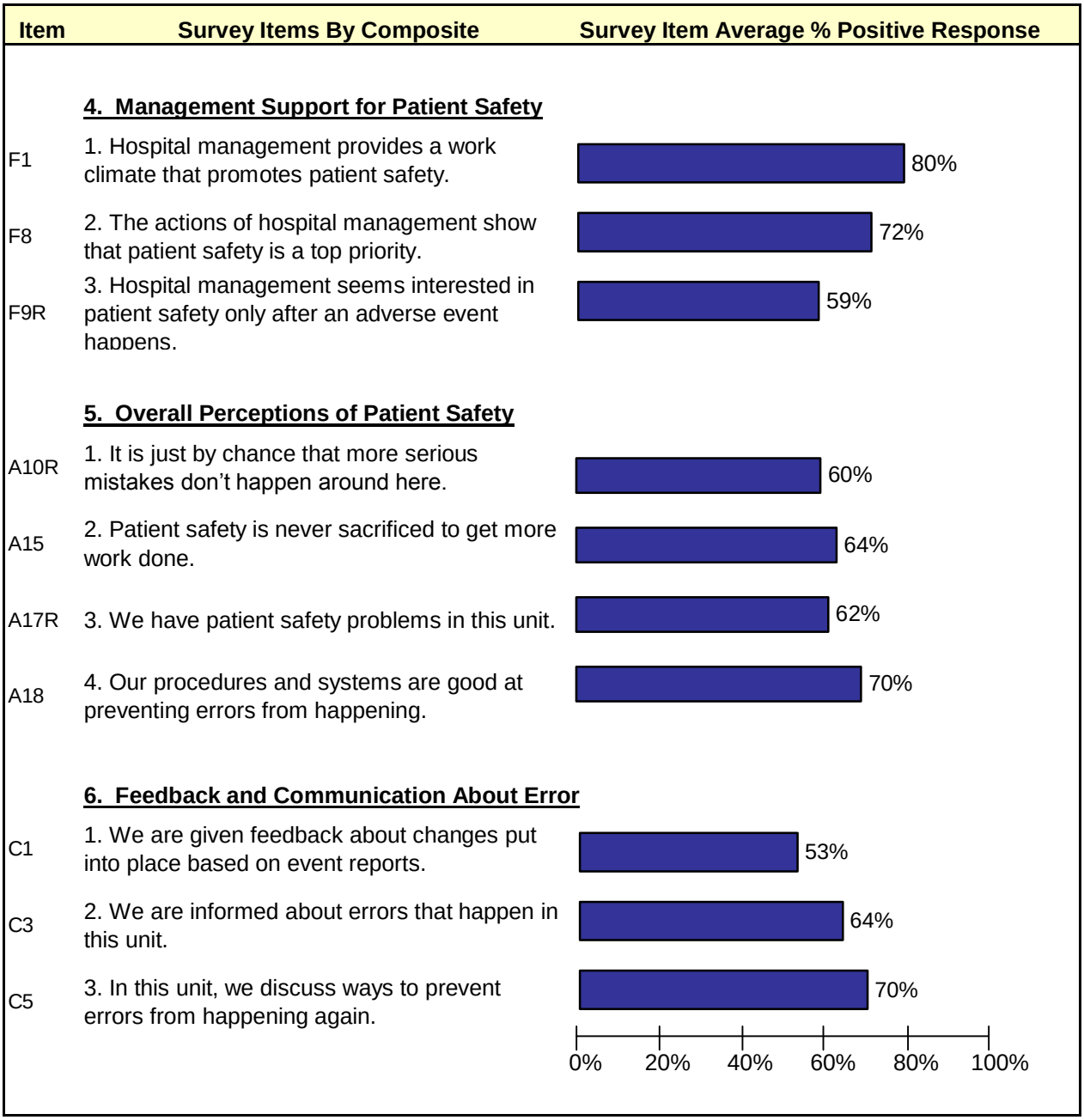


Chart 5-2. Item-level Average Percent Positive Response—Across All 2009 Database Hospitals (Page 1 of 4)



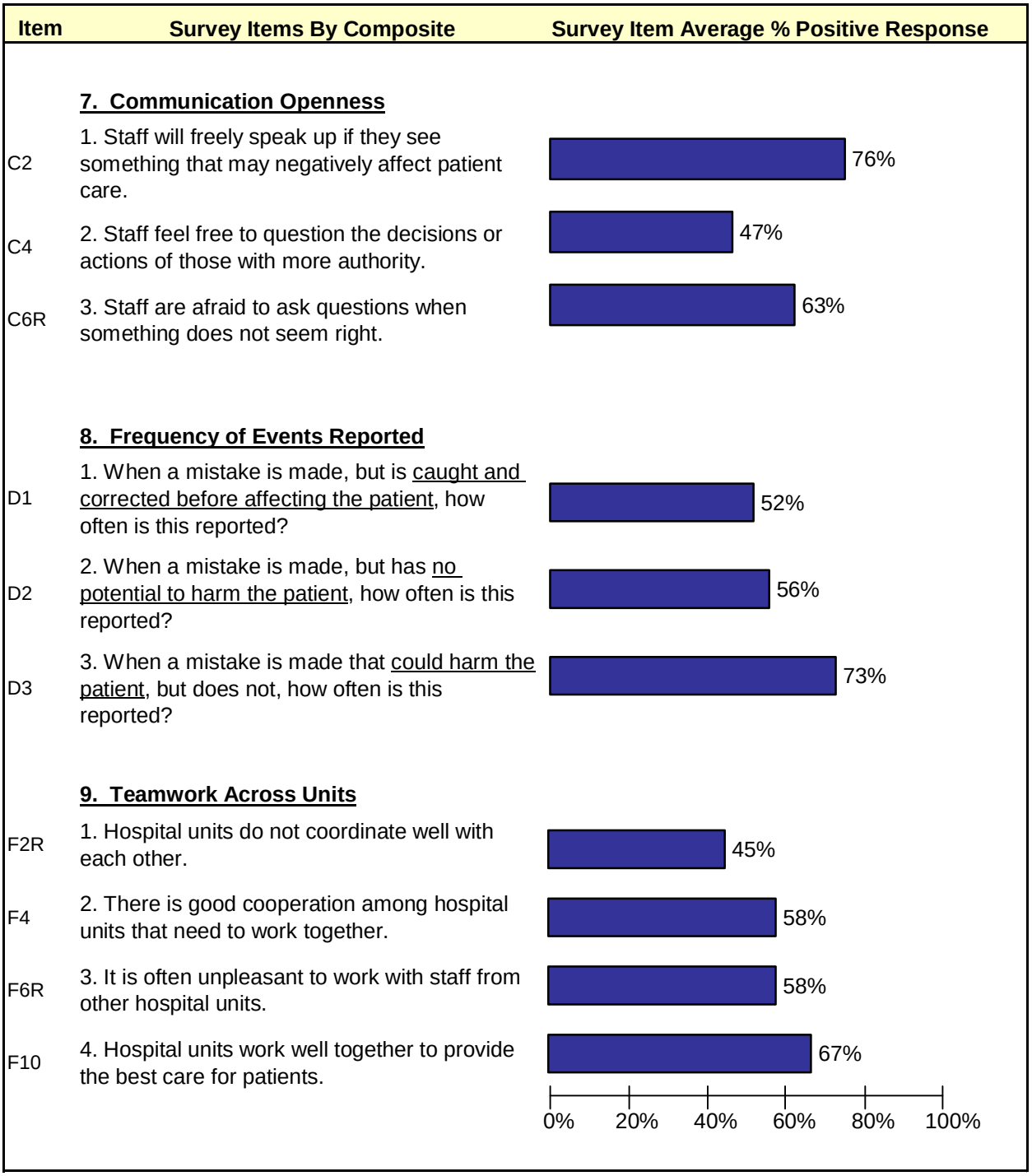
Note: The item's survey location is shown to the left. An "R" indicates a negatively worded item, where the percent positive response is based on those who responded "Strongly disagree" or "Disagree," or "Never" or "Rarely" (depending on the response category used for the item).

Chart 5-2. Item-level Average Percent Positive Response—Across All 2009 Database Hospitals (Page 2 of 4)



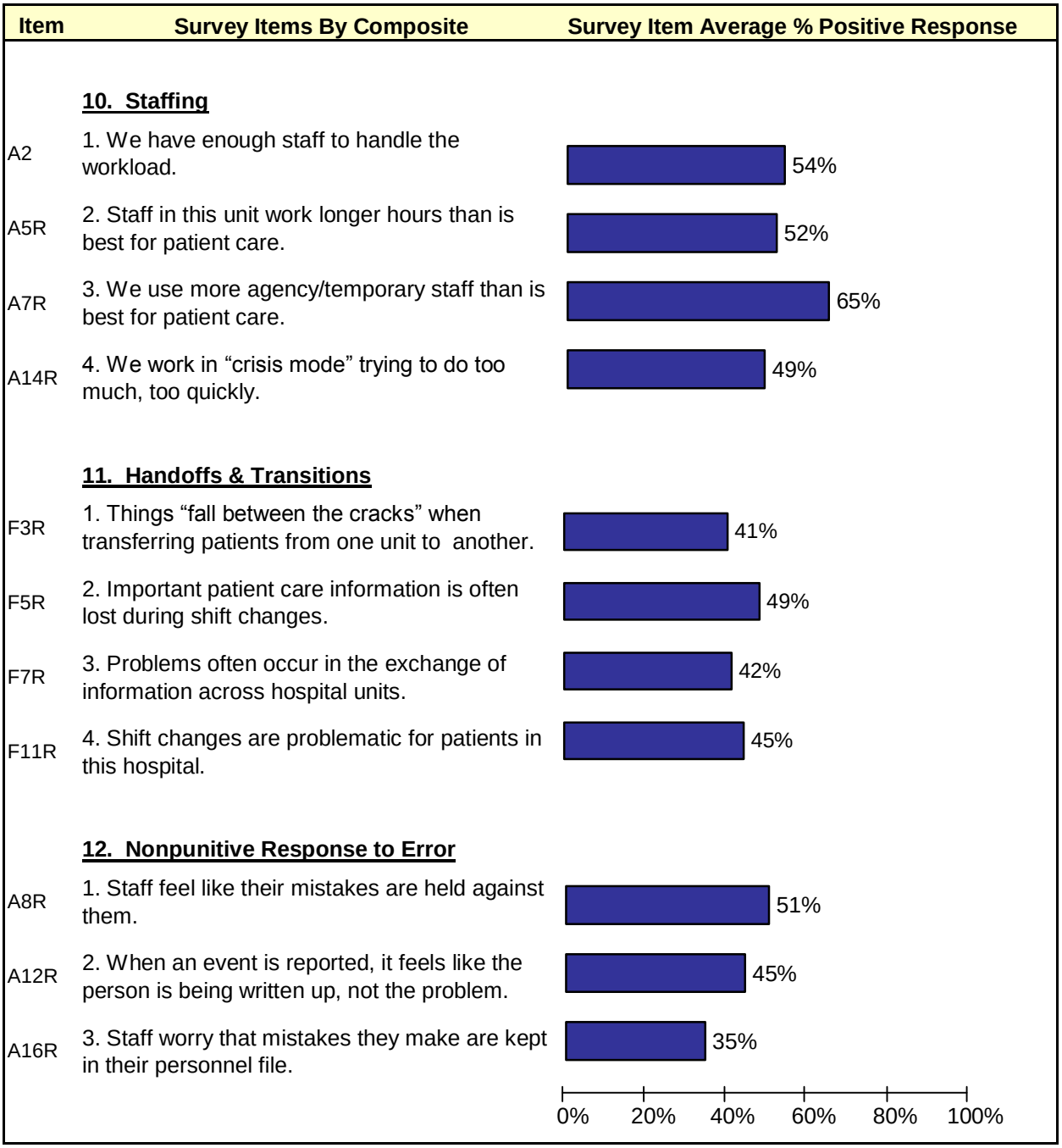
Note: The item's survey location is shown to the left. An "R" indicates a negatively worded item, where the percent positive response is based on those who responded "Strongly disagree" or "Disagree," or "Never" or "Rarely" (depending on the response category used for the item).

Chart 5-2. Item-level Average Percent Positive Response—Across All 2009 Database Hospitals (Page 3 of 4)



Note: The item's survey location is shown to the left. An "R" indicates a negatively worded item, where the percent positive response is based on those who responded "Strongly disagree" or "Disagree," or "Never" or "Rarely" (depending on the response category used for the item).

Chart 5-2. Item-level Average Percent Positive Response—Across All 2009 Database Hospitals (Page 4 of 4)



Note: The item's survey location is shown to the left. An "R" indicates a negatively worded item, where the percent positive response is based on those who responded "Strongly disagree" or "Disagree," or "Never" or "Rarely" (depending on the response category used for the item).

Chart 5-3. Distribution of Work Area/Unit Patient Safety Grades—Averages Across All 2009 Database Hospitals

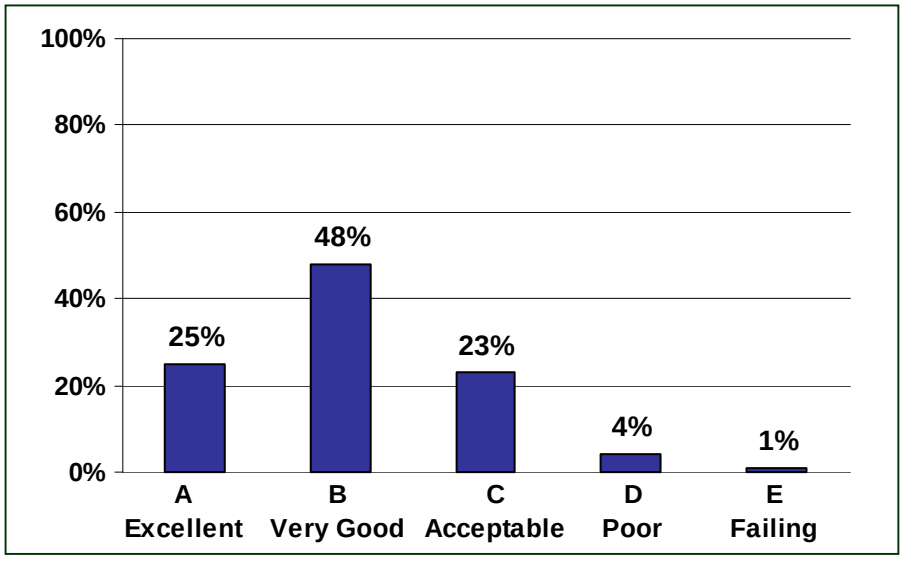
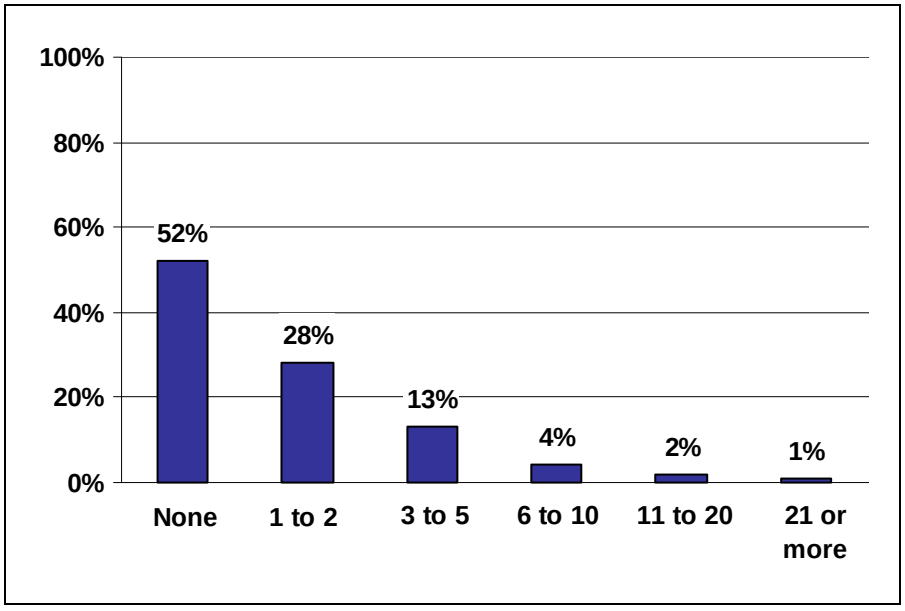


Chart 5-4. Distribution of Numbers of Events Reported in the Past 12 Months—Averages Across All 2009 Database Hospitals



Chapter 6. Comparing Your Results

To compare your hospital's survey results to the results from the database hospitals, you will need to calculate your hospital's percent positive response on the survey's 42 items and 12 composites (plus the two questions on patient safety grade and number of events reported). Refer to Chapter 5 and the Notes section at the end of this report for a description of how to calculate these percent positive scores. You will then be able to compare your hospital's results against the database averages, and examine the percentile scores to place your hospital's results relative to the distribution of database hospitals.

When comparing your hospital's results against results from the database, keep in mind that the database only provides *relative* comparisons. Even though your hospital's survey results may be better than the database statistics, you may still believe there is room for improvement in a particular area within your hospital in an *absolute* sense. As you will notice from the database results, there are some patient safety composites that even the highest-scoring hospitals could improve upon. Therefore, the comparative data provided in this report should be used to supplement your hospital's own efforts toward identifying areas of strength and areas on which to focus patient safety culture improvement efforts.

Highlights

- When examining differences in percent positive scores across hospitals, there was considerable variability in the range of scores comparing the lowest and highest-scoring hospitals.
  - As an indicator of this variability in scores, the average difference between the percent positive scores of the lowest and highest-scoring hospitals was 60 percent across the 12 patient safety composites, and 71 percent across the 42 survey items.
- There was a wide range of response in patient safety grades, from at least one hospital where none of the respondents (0 percent) provided their unit with a patient safety grade of "A-Excellent," to a hospital where 63 percent did.
- There was also a wide range of response in the number of events reported, from a hospital where 96 percent of respondents had not reported a single event over the past 12 months, to a hospital where only 5 percent had not reported an event.

Description of Comparative Statistics

In addition to the average percent positive scores presented in the charts in the previous chapter (Chapter 5), a number of additional statistics are provided in this report to facilitate comparisons against the database hospitals. A description of each statistic shown in the comparative results tables in this chapter is provided next.

Average Percent Positive and Standard Deviation

The average percent positive scores for each of the 12 patient safety culture composites and for the survey's 42 items (plus the two questions on patient safety grade and number of events reported) are provided in the comparative results tables in this chapter (these statistics were also displayed in the previous chapter in Charts 5-1 to 5-4). These average percent positive scores were calculated by averaging composite-level percent positive scores across all hospitals in the database, as well as averaging item-level percent positive scores across hospitals. Since the percent positive is displayed as an overall average, scores from each hospital are weighted equally in their contribution to the calculation of the average.[4]

In addition, the standard deviation (s.d.), a measure of the spread or variability of hospital scores around the average, is also displayed. The standard deviation tells you the extent to which hospitals' scores differ from the average:

- If scores from all hospitals were exactly the same, then the average would represent all their scores perfectly and the standard deviation would be zero.

- If scores from all hospitals were very close to the average, then the standard deviation would be small, and close to zero.

- If scores from many hospitals were very different from the average, then the standard deviation would be a large number.

When the distribution of hospital scores follows a normal, bell-shaped curve (where most of the scores fall in the middle of the distribution, with fewer scores at the lower and higher ends of the distribution), the average, plus or minus the standard deviation, will include about 68 percent of all hospital scores. For example, if an average percent positive score across the database hospitals was 70 percent with a standard deviation of 10 percent (and scores were normally distributed), then about 68 percent of all the database hospitals would have scores between 60 and 80 percent.

Statistically "significant" differences between scores. You may be interested in determining the statistical significance of differences between your scores and the averages in the database, or between scores in various breakout categories (differences in scores by hospital bed size, teaching status, etc). Statistical significance is greatly influenced by samples size, so as the number of observations in comparison groups gets larger, small differences in scores will end up being statistically significant. While a 1 percent difference between percent positive scores might be "statistically" significant (that is, not due to chance), the difference is not likely to be meaningful or "practically" significant. Keep in mind that statistically significant differences are not always important, and non-significant differences are not always trivial. Therefore, we recommend the following guideline:

- **Use a 5 percent difference as a rule of thumb when comparing your hospital's results to the database averages.** Your hospital's percent positive score should be at least 5 percent higher than the database average to be considered "better," and should be

[4] As noted in Chapter 5, an alternative method would be to report a straight percent of positive response across all respondents, but this method would give greater weight to respondents from larger hospitals since they account for almost twice as many responses as those from smaller hospitals.

at least 5 percent lower to be considered "lower" than the database average. A 5 percent difference is likely to be statistically significant for most hospitals given the number of responses per hospital, and is also a meaningful difference to consider.

Minimum and Maximum Scores

The minimum (lowest) and maximum (highest) percent positive scores are presented for each composite and item. These scores provide information about the range of percent positive scores obtained by hospitals in the database and are actual scores from the lowest and highest-scoring hospitals. When comparing against the minimum and maximum scores, keep in mind that these scores may represent hospitals that are extreme outliers (indicated by large differences between the minimum and the 10th percentile score, or between the 90th percentile score and the maximum).

Percentiles

The 10th, 25th, 50th (or median), 75th and 90th percentile scores are displayed for the survey composites and items. Percentiles provide information about the distribution of hospital scores. To calculate percentile scores, all hospital percent positive scores were ranked in order from low to high. *A specific percentile score shows the percent of hospitals that scored at or below a particular score.* For example, the 50th percentile, or median, is the percent positive score where 50 percent of the hospitals scored the same or lower, and 50 percent of the hospitals scored higher. When the distribution of hospital scores follows a normal, bell-shaped curve (where most of the scores fall in the middle of the distribution with fewer scores at the lower and higher ends of the distribution), the 50th percentile, or median, will be very similar to the average score. Interpret the percentile scores as shown in Table 6-1.

Table 6-1. Interpretation of Percentile Scores

Percentile Score	Interpretation
10th percentile This score represents the lowest scoring hospitals	10% of the hospitals scored the same or lower 90% of the hospitals scored higher
25th percentile This score represents lower-scoring hospitals	25% of the hospitals scored the same or lower 75% of the hospitals scored higher
50th percentile (or median) This score represents the middle of the distribution of hospitals	50% of the hospitals scored the same or lower 50% of the hospitals scored higher
75th percentile This score represents higher-scoring hospitals	75% of the hospitals scored the same or lower 25% of the hospitals scored higher
90th percentile This score represents the highest scoring hospitals	90% of the hospitals scored the same or lower 10% of the hospitals scored higher

To compare against the database percentiles, compare your hospital's percent positive scores against the percentile scores for each composite and item. Look for the highest percentile where your hospital's score is *higher* than that percentile.

For example: On survey item 1 in Table 6-2, the 75th percentile score is 49 percent positive, and the 90th percentile score is 62 percent positive.

Table 6-2. Sample Percentile Statistics

Survey Item	Survey Item % Positive Response						
	Min	10th %ile	25th %ile	Median/ 50th %ile	75th %ile	90th %ile	Max
Item 1	8%	10%	25%	35%	49%	62%	96%

If your hospital's score is 55%, your score falls here:

If your hospital's score is 65%, your score falls here:

- If your hospital's score is 55 percent positive, it falls above the 75th percentile (but below the 90th), meaning that your hospital scored higher than at least 75 percent of the hospitals in the database.

- If your hospital's score is 65 percent positive, it falls above the 90th percentile, meaning your hospital scored higher than at least 90 percent of the hospitals in the database.

Composite and Item-level Comparative Tables

Table 6-3 presents comparative statistics (average percent positive and standard deviation, minimum and maximum scores, and percentiles) for each of the 12 patient safety culture composites. The patient safety culture composites are shown in order from the highest average percent positive response to the lowest.

Table 6-4 presents comparative statistics for each of the 42 survey items. The survey items are grouped by the patient safety culture composite they are intended to measure, and within each composite the items are presented in the order in which they appear in the survey.

The comparative results in Tables 6-3 and 6-4 show considerable variability in the range of hospital scores (lowest to highest) across the 12 patient safety culture composites. There was a 60 percent average difference between the percent positive scores of the lowest and highest hospitals for the composites, and a 71 percent average difference for the items. The standard deviation around the average percent positive scores ranged from 6.17 percent to 11.77 percent on the composites, and ranged from 5.81 percent to 13.92 percent on the items.

Patient safety grades shown in Table 6-5 had a wide range of response, from at least one hospital where none of the respondents (0 percent) provided their unit with a patient safety grade of "A-Excellent," to a hospital where 63 percent did.

Number of events reported also had a wide range of response as shown in Table 6-6, from a hospital where 96 percent of respondents had not reported a single event over the past 12 months, to a hospital where only 5 percent had not reported an event.

Table 6-3. Composite-level Comparative Results for the 2009 Database

Patient Safety Culture Composites	# Hospitals	Average % Positive	s.d.	Composite % Positive Response						
				Min	10th %ile	25th %ile	Median/ 50th %ile	75th %ile	90th %ile	Max
1. Teamwork Within Units	621	79%	6.17%	52%	72%	76%	80%	83%	87%	97%
2. Supervisor/Manager Expectations & Actions Promoting Patient Safety	622	75%	6.74%	47%	66%	70%	75%	79%	83%	95%
3. Organizational Learning-Continuous Improvement	621	71%	7.64%	39%	61%	66%	71%	76%	80%	94%
4. Management Support for Patient Safety	620	70%	10.15%	37%	57%	64%	71%	78%	84%	97%
5. Overall Perceptions of Patient Safety	621	64%	9.36%	27%	52%	58%	64%	70%	77%	89%
6. Feedback & Communication About Error	618	63%	8.63%	32%	52%	57%	62%	68%	74%	90%
7. Communication Openness	619	62%	6.94%	40%	54%	58%	61%	66%	70%	98%
8. Frequency of Events Reported	617	60%	7.97%	33%	50%	55%	60%	66%	71%	84%
9. Teamwork Across Units	621	57%	11.00%	14%	44%	49%	56%	65%	72%	91%
10. Staffing	620	55%	10.28%	25%	42%	48%	54%	62%	69%	87%
11. Handoffs & Transitions	622	44%	11.77%	19%	30%	36%	42%	51%	61%	93%
12. Nonpunitive Response to Error	621	44%	8.68%	14%	34%	38%	43%	49%	55%	82%

Table 6-4. Item-level Comparative Results for the 2009 Database (Page 1 of 4)

Item	Survey Items By Composite	# Hospitals & # Respondents	Average % Positive	s.d.	Survey Item % Positive Response						
					Min	10th %ile	25th %ile	Median/ 50th %ile	75th %ile	90th %ile	Max
1.	**Teamwork Within Units**										
A1	1. People support one another in this unit.	H = 621 N = 192,527	85%	6.40%	45%	77%	82%	86%	89%	93%	100%
A3	2. When a lot of work needs to be done quickly, we work together as a team to get the work done.	H = 621 N = 192,455	86%	5.81%	62%	79%	82%	86%	90%	93%	100%
A4	3. In this unit, people treat each other with respect.	H = 621 N = 192,280	78%	7.93%	31%	68%	73%	78%	83%	87%	100%
A11	4. When one area in this unit gets really busy, others help out.	H = 621 N = 189,110	68%	8.42%	26%	58%	63%	68%	73%	79%	97%
2.	**Supervisor/Manager Expectations & Actions Promoting Patient Safety**										
B1	1. My supv/mgr says a good word when he/she sees a job done according to established patient safety procedures.	H = 622 N = 189,567	72%	8.21%	41%	61%	67%	72%	78%	81%	95%
B2	2. My supv/mgr seriously considers staff suggestions for improving patient safety.	H = 622 N = 189,149	76%	7.86%	41%	66%	71%	76%	82%	86%	100%
B3R	3. Whenever pressure builds up, my supv/mgr wants us to work faster, even if it means taking shortcuts.	H = 622 N = 189,526	74%	8.55%	43%	64%	68%	74%	80%	85%	100%
B4R	4. My supv/mgr overlooks patient safety problems that happen over and over.	H = 622 N = 187,842	77%	7.05%	52%	68%	72%	77%	81%	86%	100%
3.	**Organizational Learning— Continuous Improvement**										
A6	1. We are actively doing things to improve patient safety.	H = 621 N = 190,239	82%	7.77%	19%	73%	77%	82%	87%	91%	100%
A9	2. Mistakes have led to positive changes here.	H = 622 N = 191,118	63%	8.58%	33%	53%	57%	63%	68%	74%	100%
A13	3. After we make changes to improve patient safety, we evaluate their effectiveness.	H = 622 N = 188,202	68%	9.76%	12%	56%	61%	68%	74%	79%	94%

Note: The item's survey location is shown to the left. An "R" indicates a negatively worded item, where the percent positive response is based on those who responded "Strongly disagree" or "Disagree," or "Never" or "Rarely" (depending on the response category used for the item).

Table 6-4. Item-level Comparative Results for the 2009 Database (Page 2 of 4)

Item	Survey Items By Composite	# Hospitals & # Respondents	Average % Positive	s.d.	Survey Item % Positive Response						
					Min	10th %ile	25th %ile	Median/ 50th %ile	75th %ile	90th %ile	Max
4.	**Management Support for Patient Safety**										
F1	1. Hospital mgmt provides a work climate that promotes patient safety.	H = 622 N = 188,278	80%	9.75%	30%	67%	73%	80%	87%	91%	100%
F8	2. The actions of hospital mgmt show that patient safety is a top priority.	H = 620 N = 184,677	72%	10.49%	36%	58%	65%	72%	79%	85%	100%
F9R	3. Hospital mgmt seems interested in patient safety only after an adverse event happens.	H = 622 N = 184,071	59%	12.01%	15%	45%	51%	59%	67%	76%	93%
5.	**Overall Perceptions of Patient Safety**										
A10R	1. It is just by chance that more serious mistakes don't happen around here.	H = 622 N = 190,591	60%	11.00%	18%	47%	53%	60%	68%	74%	85%
A15	2. Patient safety is never sacrificed to get more work done.	H = 621 N = 187,492	64%	10.63%	27%	51%	57%	63%	71%	78%	100%
A17R	3. We have patient safety problems in this unit.	H = 622 N = 188,306	62%	11.67%	22%	48%	55%	62%	69%	77%	92%
A18	4. Our procedures and systems are good at preventing errors from happening.	H = 622 N = 190,749	70%	9.00%	35%	59%	64%	70%	76%	81%	100%
6.	**Feedback and Communication About Error**										
C1	1. We are given feedback about changes put into place based on event reports.	H = 620 N = 181,755	53%	10.41%	18%	40%	47%	54%	60%	65%	90%
C3	2. We are informed about errors that happen in this unit.	H = 620 N = 182,755	64%	9.64%	35%	53%	58%	63%	70%	77%	93%
C5	3. In this unit, we discuss ways to prevent errors from happening again.	H = 618 N = 183,922	70%	8.93%	33%	59%	65%	70%	76%	82%	100%

Note: The item's survey location is shown to the left. An "R" indicates a negatively worded item, where the percent positive response is based on those who responded "Strongly disagree" or "Disagree," or "Never" or "Rarely" (depending on the response category used for the item).

Table 6-4. Item-level Comparative Results for the 2009 Database (Page 3 of 4)

Item	Survey Items By Composite	# Hospitals & # Respondents	Average % Positive	s.d.	Survey Item % Positive Response						
					Min	10th %ile	25th %ile	Median/ 50th %ile	75th %ile	90th %ile	Max
7.	**Communication Openness**										
C2	1. Staff will freely speak up if they see something that may negatively affect patient care.	H = 621 N = 185,743	76%	6.80%	47%	68%	72%	75%	80%	84%	100%
C4	2. Staff feel free to question the decisions or actions of those with more authority.	H = 619 N = 186,331	47%	8.63%	26%	37%	42%	46%	52%	58%	94%
C6R	3. Staff are afraid to ask questions when something does not seem right.	H = 619 N = 186,727	63%	8.43%	7%	54%	57%	62%	67%	72%	100%
8.	**Frequency of Events Reported**										
D1	1. When a mistake is made, but is caught and corrected before affecting the patient, how often is this reported?	H = 621 N = 171,464	52%	9.45%	25%	40%	45%	52%	58%	64%	81%
D2	2. When a mistake is made, but has no potential to harm the patient, how often is this reported?	H = 617 N = 169,547	56%	9.10%	25%	45%	50%	56%	61%	68%	85%
D3	3. When a mistake is made that could harm the patient, but does not, how often is this reported?	H = 621 N = 170,172	73%	7.70%	45%	63%	68%	73%	78%	83%	100%
9.	**Teamwork Across Units**										
F2R	1. Hospital units do not coordinate well with each other.	H = 621 N = 182,580	45%	12.93%	5%	29%	35%	43%	53%	61%	91%
F4	2. There is good cooperation among hospital units that need to work together.	H = 621 N = 181,274	58%	12.08%	11%	43%	49%	57%	67%	74%	93%
F6R	3. It is often unpleasant to work with staff from other hospital units.	H = 621 N = 179,358	58%	10.54%	7%	46%	51%	58%	65%	72%	100%
F10	4. Hospital units work well together to provide the best care for patients.	H = 621 N = 180,279	67%	11.51%	21%	52%	58%	67%	76%	82%	95%

Note: The item's survey location is shown to the left. An "R" indicates a negatively worded item, where the percent positive response is based on those who responded "Strongly disagree" or "Disagree," or "Never" or "Rarely" (depending on the response category used for the item).

Table 6-4. Item-level Comparative Results for the 2009 Database (Page 4 of 4)

Item	Survey Items By Composite	# Hospitals & # Respondents	Average % Positive	s.d.	Survey Item % Positive Response						
					Min	10th %ile	25th %ile	Median/ 50th %ile	75th %ile	90th %ile	Max
10.	**Staffing**										
A2	1. We have enough staff to handle the workload.	H = 620 N = 191,634	54%	13.92%	11%	37%	44%	53%	64%	73%	98%
A5R	2. Staff in this unit work longer hours than is best for patient care.	H = 620 N = 185,900	52%	10.11%	9%	40%	45%	51%	58%	65%	87%
A7R	3. We use more agency/temporary staff than is best for patient care.	H = 620 N = 181,833	65%	12.35%	0%	50%	57%	65%	73%	78%	100%
A14R	4. We work in "crisis mode" trying to do too much, too quickly.	H = 620 N = 187,157	49%	12.73%	6%	34%	40%	47%	58%	67%	91%
11.	**Handoffs & Transitions**										
F3R	1. Things "fall between the cracks" when transferring patients from one unit to another.	H = 622 N = 178,434	41%	13.77%	13%	25%	30%	38%	49%	60%	91%
F5R	2. Important patient care information is often lost during shift changes.	H = 622 N = 176,811	49%	10.99%	19%	37%	41%	48%	55%	63%	91%
F7R	3. Problems often occur in the exchange of information across hospital units.	H = 622 N = 178,665	42%	12.15%	0%	28%	33%	40%	48%	59%	100%
F11R	4. Shift changes are problematic for patients in this hospital.	H = 622 N = 176,268	45%	13.27%	18%	29%	35%	44%	53%	63%	94%
12.	**Nonpunitive Response to Error**										
A8R	1. Staff feel like their mistakes are held against them.	H = 621 N = 189,625	51%	9.58%	18%	40%	45%	50%	58%	63%	88%
A12R	2. When an event is reported, it feels like the person is being written up, not the problem.	H = 621 N = 186,807	45%	9.37%	12%	35%	39%	44%	50%	57%	88%
A16R	3. Staff worry that mistakes they make are kept in their personnel file.	H = 621 N = 187,203	35%	9.23%	12%	24%	29%	34%	41%	48%	71%

Note: The item's survey location is shown to the left. An "R" indicates a negatively worded item, where the percent positive response is based on those who responded "Strongly disagree" or "Disagree," or "Never" or "Rarely" (depending on the response category used for the item).

Table 6-5. Average Distribution of Work Area/Unit Patient Safety Grades—2009 Database Comparative Results

Work Area/Unit Patient Safety Grade	# Hospitals & # Respondents	Average %	s.d.	Percent of Response						
				Min	10th %ile	25th %ile	50th %ile	75th %ile	90th %ile	Max
A Excellent	H = 621 N = 42,850	25%	9.10%	0%	14%	18%	24%	30%	36%	63%
B Very Good	H = 621 N = 83,619	48%	7.91%	6%	39%	43%	47%	52%	57%	80%
C Acceptable	H = 621 N = 43,854	23%	8.31%	0%	12%	17%	23%	28%	32%	57%
D Poor	H = 621 N = 8,769	4%	4.45%	0%	0%	2%	4%	6%	9%	62%
E Failing	H = 621 N = 1,631	1%	1.23%	0%	0%	0%	0%	1%	2%	18%

Note: Average percent totals in the table may not sum to exactly 100% due to rounding of decimals.

Table 6-6. Average Distribution of Number of Events Reported in the Past 12 Months—2009 Database Comparative Results

Number of Events Reported by Respondents	# Hospitals & # Respondents	Average %	s.d.	Percent of Response						
				Min	10th %ile	25th %ile	50th %ile	75th %ile	90th %ile	Max
No events	H = 621 N = 97,624	52%	10.99%	5%	39%	46%	53%	59%	65%	96%
1 to 2 events	H = 621 N = 48,996	28%	6.67%	4%	21%	24%	27%	31%	36%	63%
3 to 5 events	H = 621 N = 21,330	13%	5.19%	0%	7%	9%	12%	15%	20%	41%
6 to 10 events	H = 621 N = 7,321	4%	2.96%	0%	2%	3%	4%	6%	8%	27%
11 to 20 events	H = 621 N = 2,744	2%	1.88%	0%	0%	1%	1%	2%	4%	17%
21 event reports or more	H = 621 N = 1,807	1%	1.34%	0%	0%	0%	1%	1%	3%	15%

Note: Average percent totals in the table may not sum to exactly 100% due to rounding of decimals.

Appendixes A & B:
Overall Results by Hospital and Respondent Characteristics

In addition to the overall results on the database hospitals presented, Part II of the report presents data tables in Appendixes A and B that show average percent positive scores on the survey composites and items across database hospitals, broken down by the following hospital and respondent characteristics:

Appendix A: Results by Hospital Characteristics

- Bed size
- Teaching status
- Ownership and control
- Geographic region

Appendix B: Results by Respondent Characteristics

- Work area/unit
- Staff position
- Interaction with patients

Because there are many breakout tables, they are included in Appendixes A and B. Highlights of the findings from the breakout tables in these appendixes are provided on the following pages.

Highlights from Appendix A: Overall Results by Hospital Characteristics

Bed Size (Tables A-1, A-3, A-4)

- Smaller hospitals (49 beds or fewer) had the highest average percent positive response on all 12 patient safety culture composites.
- The largest difference by bed size was on *Handoffs & Transitions* where the smallest hospitals (6-24 beds) scored 22 percent higher than large hospitals (400-499 beds) (55 percent compared to 33 percent positive).
- Large hospitals (400-499 beds) scored lowest on the percent of respondents who gave their work area/unit a patient safety grade of "Excellent" or "Very good" (64 percent for 400-499 beds compared to 78 percent for 25-49 beds).
- There were no noticeable differences on number of events reported based on bed size (all differences were 3 percent or less).

Teaching Status, and Ownership and Control (Tables A-5, A-7, A-8)

- Non-teaching hospitals had the highest average percent positive response on *Handoffs & Transitions*.
- Government-owned hospitals were more positive than non-government on *Handoffs & Transitions* (6 percent more positive), and *Staffing* (5 percent more positive).
- There were no noticeable differences on patient safety grade or number of events reported based on teaching status or ownership and control (all differences were 3 percent or less).

Geographic Region (Tables A-9, A-11, A-12)

- East South Central hospitals had the highest average percent positive response across the 12 patient safety culture composites; Pacific hospitals had the lowest.
- The largest difference by region was on *Staffing* and *Handoffs & Transitions* where West North Central hospitals were 10 percent more positive than Mid Atlantic/New England hospitals (for *Staffing*) and Pacific hospitals (for *Handoffs & Transitions*).
- West South Central hospitals scored highest on the percent of respondents who gave their work area/unit a patient safety grade of "Excellent" or "Very good" (77 percent).
- Pacific hospitals had the highest percent of respondents who reported one or more events in the past year (53 percent); the lowest percent of respondents reporting events was in the West South Central region (40 percent).

Highlights from Appendix B: Overall Results by Respondent Characteristics

Work Area/Unit (Tables B-1, B-3, B-4)

- Respondents in *Rehabilitation* had the highest average percent positive response on 8 of the 12 patient safety culture composites.
- The largest difference by work area/unit was on *Nonpunitive Response to Error* (22 percent). On this composite, *Rehabilitation* was 59 percent positive and *Emergency* was 37 percent positive.
- *Rehabilitation* had the highest percent of respondents who gave their work area/unit a patient safety grade of "Excellent" or "Very good" (81 percent); *Emergency* and *Medicine* had the lowest percent (62 percent).
- *ICU (any type)* had the highest percent of respondents reporting one or more events in the past year (66 percent); *Anesthesiology* had the lowest percent of respondents reporting events (43 percent).

Staff Position (Tables B-5, B-7, B-8)

- Respondents in *Administration/Management* had the highest average percent positive response on 11 of the 12 patient safety culture composites.
- The largest difference (26 percent) by staff position was on *Nonpunitive Response to Error; Administration/Management* was 62 percent positive and *Patient Care Assistants Aides/Care Partners* were 36 percent positive.
- *Administration/Management* had the highest percent of respondents who gave their work area/unit a patient safety grade of "Excellent" or "Very good" (82 percent); *Registered Nurse/LVN/LPN* had the lowest percent (66 percent).
- *Pharmacists* had the highest percent of respondents reporting one or more events in the past year (75 percent); *Unit Assistants/Clerks/Secretaries* had the lowest percent reporting events (22 percent).

Interaction with Patients (Tables B-9, B-11, B-12)

- Respondents *with* direct patient interaction were 7 percent more positive on *Handoffs & Transitions* compared to those *without* direct patient interaction (45 percent compared to 38 percent positive).
- Respondents *without* direct patient interaction were 7 percent more positive about *Management Support for Patient Safety* than those *with* direct patient interaction (76 percent compared to 69 percent positive).
- Respondents *without* direct patient interaction had the highest percent of respondents who gave their work area/unit a patient safety grade of "Excellent" or "Very good" (77 percent) compared to those *with* direct patient interaction (72 percent).
- More respondents *with* direct patient interaction reported one or more events in the past year (53 percent) than respondents *without* direct patient interaction (32 percent).

Chapter 7. Trending: Comparing Results Over Time

Many hospitals that have administered the hospital patient safety culture survey have indicated that they intend to re-administer the survey on a regular basis to track changes in patient safety culture over time. For the 2009 Comparative Database Report, some of the hospitals that previously administered the survey and submitted data for the 2008 report also submitted data for the 2009 report based on a follow-up survey of their staff. While the overall benchmarks presented earlier in this report reflect only the most recent survey data from all 622 participating hospitals, we have data from two or more administrations of the survey for 204 hospitals, allowing us to examine trends over time for these hospitals. This chapter presents the results from trend analyses comparing patient safety culture survey results for these 204 hospitals since their previous administration. Changes in scores of 5 percent or greater are highlighted.

Highlights

- For the 204 hospitals with trending data, the average length of time between previous and most recent survey administrations was 16 months (range: 7 months to 35 months).
- The average change in percent positive scores between administrations on the patient safety culture composites was a slight increase of 2 percent (ranging from 1 to 3 percent change).
- 37 percent of trending hospitals increased by 5 percent or more on *Overall Perceptions of Patient Safety* (see Chart 7-1).
- 22 percent of hospitals decreased in percent positive scores by 5 percent or more on *Organizational Learning–Continuous Improvement* (see Chart 7-1).
- There were no noticeable differences on changes to the percent of respondents who gave their work area/unit a patient safety grade of "A-Excellent" and "B-Very Good" (average percent increased by 4 percent).
- There were no noticeable differences on the number of events reported by respondents in the last 12 months (the average percent of respondents reporting one or more events increased by only 2 percent).

When reviewing the results in this chapter, it is important to keep in mind that the trending results from these 204 hospitals represent approximately one-third of the total number of database hospitals, and therefore the trending data should be viewed as preliminary. In addition, there are a number of complex reasons why survey scores might change, or not change, over time. Important factors to consider are whether the hospital implemented patient safety initiatives between survey administrations and the length of the time period between administrations. Survey methodology issues can also play a big role in score changes. Low survey response rates for the previous or most recent administration, changes in the number of staff asked to complete the survey, or changes in the types of staff asked to complete the survey, will make it difficult to

interpret changes in scores over time. We provide descriptive information about some of the factors that may have affected changes in scores where possible.

Characteristics of the 204 Trending Hospitals

Table 7-1 displays summary statistics from the previous and most recent survey administrations for the 204 trending hospitals. As shown in the table, the average number of completed surveys increased in the most recent survey administration (from an average of 320 to 341 respondents). Overall average response rates were similar between previous and most recent administrations. Additional characteristics of the 204 hospitals are below:

- Most of the 204 trending hospitals (74 percent) administered the survey to the same types of staff in their previous and most recent administrations.

- The average change in response rate from the previous administration was 2 percent (range: one hospital had a decrease in response rate by 90 percent and one had an increase by 79 percent).

- The average length of time between previous and most recent survey administrations was 16 months (range: 7 months to 35 months).

Table 7-1. Summary Statistics for Previous and Most Recent Data Submissions from the 204 Trending Hospitals

Summary Statistic	Previous Survey Administration Submitted for 2007 or 2008 database	Most Recent Survey Administration Submitted for 2009 database
Total number of hospitals	204	204
Total number of respondents	65,321	69,541
Number of hospitals (out of 204) that administered the survey to all staff, or a sample of all staff, from all departments	165	167
Number of completed surveys per hospital	Average: 320 Range: 13 – 3,865	Average: 341 Range: 11 – 3,908
Hospital response rate	Average: 50% Range: 6 – 100%	Average: 52% Range: 7 – 100%

As shown in Table 7-2, the distribution of trending hospitals by bed size is similar to the distribution of AHA-registered U.S. hospitals, as well as the distribution of database hospitals. Similar to the AHA-registered U.S. hospitals, the largest group of trending hospitals (42 hospitals or 21 percent) fall in the bed size category of 25 to 49 beds. The majority of the trending hospitals (132 hospitals or 65 percent) have fewer than 200 beds, which is similar to the percentage of AHA-registered U.S. hospitals with fewer than 200 beds (74 percent). The trending hospitals, however, disproportionately represent a larger percentage of large hospitals (500 ore more beds), with more than twice the percentage of hospitals in comparison to the AHA-registered U.S. hospitals (12 percent versus 5 percent).

Table 7-2. Distribution of 204 Trending Hospitals by Bed Size

Bed Size	2009 Trending Hospitals		2009 Database Hospitals		AHA-registered U.S. Hospitals	
	Number	Percent	Number	Percent	Number	Percent
6-24 beds	21	10%	60	10%	607	10%
25-49 beds	42	21%	139	22%	1,374	22%
50-99 beds	37	18%	111	18%	1,329	21%
100-199 beds	32	16%	111	18%	1,341	21%
200-299 beds	22	11%	74	12%	704	11%
300-499 beds	26	13%	78	13%	607	10%
500 or more beds	24	12%	49	8%	318	5%
TOTAL	204	100%	622	100%	6,280	100%

Note: Average percent totals in the table may not sum to exactly 100% due to rounding of decimals.

Tables 7-3 and 7-4 show that most of the 204 trending hospitals were non-teaching (71 percent) and non-government owned and controlled (69 percent). Again, these distributions vary when compared to the 2009 database overall (69 percent non-teaching and 22 percent government-owned) and when compared to AHA hospitals (77 percent non-teaching and 26 percent government-owned). Therefore, the trending hospitals disproportionately represent a larger percentage of non-teaching hospitals and a larger percentage of government-owned hospitals.

Table 7-3. Distribution of 204 Trending Hospitals by Teaching Status

Teaching Status	2009 Trending Hospitals		2009 Database Hospitals		AHA-registered U.S. Hospitals	
	Number	Percent	Number	Percent	Number	Percent
Teaching	59	29%	190	31%	1,442	23%
Non-teaching	145	71%	432	69%	4,838	77%
TOTAL	204	100%	622	100%	6,280	100%

Note: Average percent totals in the table may not sum to exactly 100% due to rounding of decimals.

Table 7-4. Distribution of 204 Trending Hospitals by Ownership and Control

Ownership and Control	2009 Trending Hospitals		2009 Database Hospitals		AHA-registered U.S. Hospitals	
	Number	Percent	Number	Percent	Number	Percent
Government (Federal or non-Federal)	63	31%	139	22%	1,645	26%
Non-government (voluntary/nonprofit or proprietary/investor-owned)	141	69%	483	78%	4,635	74%
TOTAL	204	100%	622	100%	6,280	100%

Description of Trending Statistics

Before presenting results on the changes in survey scores over time, we provide an explanation of the trending statistics that are presented. Table 7-5a shows examples of the statistics shown in this chapter. The tables show the average percent of respondents who answered positively in the most recent survey administration (left column) and the previous administration (middle column) for the 204 trending hospitals only. The change over time [Most Recent score minus (-) Previous score] is shown in the right column as a negative number if the

most recent administration showed a decline, or a positive number if the most recent administration showed an increase.

Table 7-5a. Example of Trending Statistics

Survey Item	Most Recent	Previous	Change
Item 1	80%	84%	-4%
Item 2	80%	78%	2%

Table 7-5b shows additional trending statistics that are provided. The maximum increase and maximum decrease show the scores for the hospitals with the largest average percent positive score increase and the hospitals with the largest decrease. The average increase and decrease of percent positive scores across the 204 trending hospitals is also shown. The average increase was calculated by only including hospitals that had an increase in their most recent score; hospitals that showed no change or decreased were not included when calculating the average increase. Similarly, the average decrease was calculated by only including hospitals that had a decrease in their most recent score; hospitals that showed no change or increased were not included when calculating the average decrease.

Table 7-5b. Example of Other Trending Statistics

Survey Item	Maximum Increase	Maximum Decrease	Average Increase	Average Decrease
Item 1	18%	-45%	3%	-5%
Item 2	21%	-19%	5%	-6%

The pie charts in Charts 7-1, 7-2, and 7-3 show the percent of hospitals that increased or decreased 5 percent or more on the composites, patient safety grades, and events reported respectively. The percent of hospitals that increased or decreased less than 5 percent are represented as "Did not change."

Composite and Item-level Trending Results

Table 7-6 presents trending results showing average percent positive scores on each of the 12 patient safety culture composites from the 204 trending hospitals. Percent positive scores for their most recent and previous data administration/submission are shown, as well as the percentage of change over time, the hospital scores with the maximum increase and maximum decrease, and the average increase and decrease over time across the 204 hospitals. Table 7-6 also shows that there was a slight overall increase in the average change in percent positive scores over time on the patient safety culture composites (average 2 percent, ranging from 1 to 3 percent change). For hospitals with increases in scores over time, average increases ranged from 5 to 8 percent. For hospitals with decreases in scores, average decreases ranged from -4 to -6 percent.

The item-level trending results in Table 7-7 show that the average change in item-level percent positive scores over time on the patient safety culture items ranged from a 1 percent increase to a 4 percent increase. For hospitals with increases in item scores over time, average increases ranged from 6 to 10 percent. For hospitals with decreases in item scores, average decreases ranged from -4 to -9 percent.

Trending results from the item that asks respondents to give their hospital work area/unit an overall grade on patient safety are shown in Table 7-8. The average percent of respondents giving their work area/unit a patient safety grade of "A-Excellent" and "B-Very Good" increased over time by 4 percent.

Trending results from the item that asked respondents to indicate the number of events they had reported over the past 12 months are shown in Table 7-9. The average percent of respondents reporting one or more events increased slightly over time by 2 percent.

Table 7-6. Trending: Composite-level Results

	Composite Average % Positive Response						
Patient Safety Culture Composites	Most Recent	Previous	Change	Maximum Increase	Maximum Decrease	Average Increase	Average Decrease
1. Teamwork Within Units	79%	77%	2%	64%	-14%	7%	-4%
2. Supervisor/Manager Expectations & Actions Promoting Patient Safety	75%	74%	1%	39%	-19%	5%	-5%
3. Organizational Learning-Continuous Improvement	72%	69%	3%	61%	-17%	8%	-5%
4. Management Support for Patient Safety	71%	69%	2%	52%	-24%	8%	-6%
5. Overall Perceptions of Patient Safety	65%	62%	3%	44%	-27%	7%	-6%
6. Feedback & Communication About Error	63%	61%	2%	48%	-22%	7%	-5%
7. Communication Openness	62%	60%	2%	38%	-23%	7%	-5%
8. Frequency of Events Reported	61%	59%	2%	37%	-28%	7%	-6%
9. Teamwork Across Units	58%	56%	2%	31%	-18%	7%	-5%
10. Staffing	55%	53%	2%	31%	-18%	6%	-6%
11. Handoffs & Transitions	45%	44%	1%	41%	-29%	6%	-6%
12. Nonpunitive Response to Error	45%	43%	2%	25%	-15%	5%	-5%

Note: Based on data from 204 hospitals that repeated survey administration and data submission; the number of respondents was 69,541 in the most recent database and 65,321 in the previous database.

Table 7-7. Trending: Item-level Results (Page 1 of 4)

Item	Survey Items By Composite	Item Average % Positive Response						
		Most Recent	Previous	Change	Maximum Increase	Maximum Decrease	Average Increase	Average Decrease
1.	**Teamwork Within Units**							
A1	1. People support one another in this unit.	85%	82%	3%	75%	-18%	8%	-4%
A3	2. When a lot of work needs to be done quickly, we work together as a team to get the work done.	86%	84%	2%	72%	-24%	8%	-4%
A4	3. In this unit, people treat each other with respect.	77%	75%	2%	60%	-23%	8%	-5%
A11	4. When one area in this unit gets really busy, others help out.	69%	66%	3%	48%	-19%	8%	-5%
2.	**Supervisor/Manager Expectations & Actions Promoting Patient Safety**							
B1	1. My supv/mgr says a good word when he/she sees a job done according to established patient safety procedures.	72%	69%	3%	55%	-20%	10%	-5%
B2	2. My supv/mgr seriously considers staff suggestions for improving patient safety.	77%	74%	3%	62%	-23%	8%	-5%
B3R	3. Whenever pressure builds up, my supv/mgr wants us to work faster, even if it means taking shortcuts.	75%	73%	2%	51%	-20%	7%	-5%
B4R	4. My supv/mgr overlooks patient safety problems that happen over and over.	77%	74%	3%	60%	-22%	7%	-5%
3.	**Organizational Learning— Continuous Improvement**							
A6	1. We are actively doing things to improve patient safety.	82%	80%	2%	81%	-25%	8%	-5%
A9	2. Mistakes have led to positive changes here.	64%	61%	3%	62%	-22%	9%	-6%
A13	3. After we make changes to improve patient safety, we evaluate their effectiveness.	69%	66%	3%	60%	-25%	9%	-6%

Note: Based on data from 204 hospitals that repeated survey administration and data submission. The overall number of respondents was 69,541 in the most recent database and 65,321 in the previous database, but the exact number of respondents will vary from item to item. The item's survey location is shown to the left. An "R" indicates a negatively worded item, where the percent positive response is based on those who responded "Strongly disagree" or "Disagree," or "Never" or "Rarely" (depending on the response category used for the item).

Table 7-7. Trending: Item-level Results (Page 2 of 4)

Item	Survey Items By Composite	Item Average % Positive Response						
		Most Recent	Previous	Change	Maximum Increase	Maximum Decrease	Average Increase	Average Decrease
4.	**Management Support for Patient Safety**							
F1	1. Hospital mgmt provides a work climate that promotes patient safety.	80%	78%	2%	62%	-32%	9%	-7%
F8	2. The actions of hospital mgmt show that patient safety is a top priority.	73%	70%	3%	65%	-18%	9%	-6%
F9R	3. Hospital mgmt seems interested in patient safety only after an adverse event happens.	60%	58%	2%	36%	-27%	8%	-7%
5.	**Overall Perceptions of Patient Safety**							
A10R	1. It is just by chance that more serious mistakes don't happen around here.	60%	59%	1%	33%	-43%	8%	-8%
A15	2. Patient safety is never sacrificed to get more work done.	65%	63%	2%	42%	-19%	9%	-6%
A17R	3. We have patient safety problems in this unit.	62%	61%	1%	41%	-46%	8%	-9%
A18	4. Our procedures and systems are good at preventing errors from happening.	71%	67%	4%	63%	-21%	8%	-6%
6.	**Feedback and Communication About Error**							
C1	1. We are given feedback about changes put into place based on event reports.	53%	52%	1%	47%	-32%	8%	-7%
C3	2. We are informed about errors that happen in this unit.	65%	63%	2%	47%	-26%	8%	-6%
C5	3. In this unit, we discuss ways to prevent errors from happening again.	70%	69%	1%	53%	-26%	9%	-6%

Note: Based on data from 204 hospitals that repeated survey administration and data submission. The overall number of respondents was 69,541 in the most recent database and 65,321 in the previous database, but the exact number of respondents will vary from item to item. The item's survey location is shown to the left. An "R" indicates a negatively worded item, where the percent positive response is based on those who responded "Strongly disagree" or "Disagree," or "Never" or "Rarely" (depending on the response category used for the item).

Table 7-7. Trending: Item-level Results (Page 3 of 4)

Item	Survey Items By Composite	Item Average % Positive Response						
		Most Recent	Previous	Change	Maximum Increase	Maximum Decrease	Average Increase	Average Decrease
7.	**Communication Openness**							
C2	1. Staff will freely speak up if they see something that may negatively affect patient care.	75%	74%	1%	60%	-23%	8%	-5%
C4	2. Staff feel free to question the decisions or actions of those with more authority.	47%	46%	1%	27%	-28%	8%	-6%
C6R	3. Staff are afraid to ask questions when something does not seem right.	62%	61%	1%	39%	-28%	8%	-6%
8.	**Frequency of Events Reported**							
D1	1. When a mistake is made, but is caught and corrected before affecting the patient, how often is this reported?	54%	51%	3%	37%	-34%	8%	-7%
D2	2. When a mistake is made, but has no potential to harm the patient, how often is this reported?	57%	55%	2%	36%	-21%	8%	-6%
D3	3. When a mistake is made that could harm the patient, but does not, how often is this reported?	74%	72%	2%	43%	-29%	8%	-5%
9.	**Teamwork Across Units**							
F2R	1. Hospital units do not coordinate well with each other.	46%	44%	2%	45%	-46%	8%	-7%
F4	2. There is good cooperation among hospital units that need to work together.	59%	57%	2%	36%	-25%	8%	-6%
F6R	3. It is often unpleasant to work with staff from other hospital units.	58%	56%	2%	33%	-26%	8%	-6%
F10	4. Hospital units work well together to provide the best care for patients.	68%	66%	2%	47%	-22%	8%	-6%

Note: Based on data from 204 hospitals that repeated survey administration and data submission. The overall number of respondents was 69,541 in the most recent database and 65,321 in the previous database, but the exact number of respondents will vary from item to item. The item's survey location is shown to the left. An "R" indicates a negatively worded item, where the percent positive response is based on those who responded "Strongly disagree" or "Disagree," or "Never" or "Rarely" (depending on the response category used for the item).

Table 7-7. Trending: Item-level Results (Page 4 of 4)

Item	Survey Items By Composite	Item Average % Positive Response						
		Most Recent	Previous	Change	Maximum Increase	Maximum Decrease	Average Increase	Average Decrease
10.	**Staffing**							
A2	1. We have enough staff to handle the workload.	54%	53%	1%	33%	-30%	9%	-8%
A5R	2. Staff in this unit work longer hours than is best for patient care.	52%	51%	1%	32%	-31%	7%	-7%
A7R	3. We use more agency/temporary staff than is best for patient care.	65%	62%	3%	64%	-37%	10%	-7%
A14R	4. We work in "crisis mode" trying to do too much, too quickly.	50%	48%	2%	34%	-42%	8%	-6%
11.	**Handoffs & Transitions**							
F3R	1. Things "fall between the cracks" when transferring patients from one unit to another.	42%	41%	1%	45%	-38%	7%	-6%
F5R	2. Important patient care information is often lost during shift changes.	50%	48%	2%	37%	-28%	8%	-7%
F7R	3. Problems often occur in the exchange of information across hospital units.	43%	42%	1%	54%	-35%	7%	-7%
F11R	4. Shift changes are problematic for patients in this hospital.	46%	45%	1%	29%	-31%	7%	-8%
12.	**Nonpunitive Response to Error**							
A8R	1. Staff feel like their mistakes are held against them.	52%	50%	2%	34%	-20%	6%	-5%
A12R	2. When an event is reported, it feels like the person is being written up, not the problem.	46%	43%	3%	33%	-25%	7%	-6%
A16R	3. Staff worry that mistakes they make are kept in their personnel file.	36%	34%	2%	28%	-24%	6%	-5%

Note: Based on data from 204 hospitals that repeated survey administration and data submission. The overall number of respondents was 69,541 in the most recent database and 65,321 in the previous database, but the exact number of respondents will vary from item to item. The item's survey location is shown to the left. An "R" indicates a negatively worded item, where the percent positive response is based on those who responded "Strongly disagree" or "Disagree," or "Never" or "Rarely" (depending on the response category used for the item).

Table 7-8. Trending: Average Distribution of Work Area/Unit Patient Safety Grades

Work Area/Unit Patient Safety Grade	Average Percent of Respondents within Hospitals						
	Most Recent	Previous	Change	Maximum Increase	Maximum Decrease	Average Increase	Average Decrease
A Excellent	25%	22%	3%	25%	-27%	7%	-5%
B Very Good	47%	46%	1%	74%	-42%	8%	-6%
C Acceptable	23%	24%	-1%	16%	-30%	4%	-7%
D Poor	5%	6%	-1%	44%	-51%	3%	-5%
E Failing	1%	1%	0%	18%	-20%	1%	-2%

Note: Based on data from 204 hospitals that repeated survey administration and data submission. The overall number of respondents was 69,541 in the most recent database and 65,321 in the previous database. Average percent positive totals in the table may not sum to exactly 100% due to rounding of decimals.

Table 7-9. Trending: Average Distribution of Number of Events Reported in the Past 12 Months

Number of Events Reported by Respondents	Average Percent of Respondents within Hospitals						
	Most Recent	Previous	Change	Maximum Increase	Maximum Decrease	Average Increase	Average Decrease
No events	52%	54%	-2%	24%	-45%	5%	-9%
1 to 2 events	28%	26%	2%	28%	-25%	6%	-5%
3 to 5 events	13%	12%	1%	32%	-19%	4%	-4%
6 to 10 events	4%	5%	-1%	12%	-13%	2%	-2%
11 to 20 events	2%	2%	0%	17%	-8%	2%	-1%
21 event reports or more	1%	1%	0%	7%	-6%	1%	-1%

Note: Based on data from 204 hospitals that repeated survey administration and data submission. The overall number of respondents was 69,541 in the most recent database and 65,321 in the previous database. Average percent positive totals in the table may not sum to exactly 100% due to rounding of decimals.

Pie Charts of Trending Results

The pie charts in Charts 7-1 show the percentages of hospitals that increased, decreased, or did not change by 5 percent or more on the 12 patient safety culture composites. These charts show that:

- The composite with the largest percentage of hospitals that increased 5 percent or more was *Overall Perceptions of Patient Safety* (37 percent of trending hospitals increased by at least 5 percent).
- The composite with the largest percentage of hospitals that decreased 5 percent or more was *Organizational Learning-Continuous Improvement* (22 percent of trending hospitals decreased by at least 5 percent).

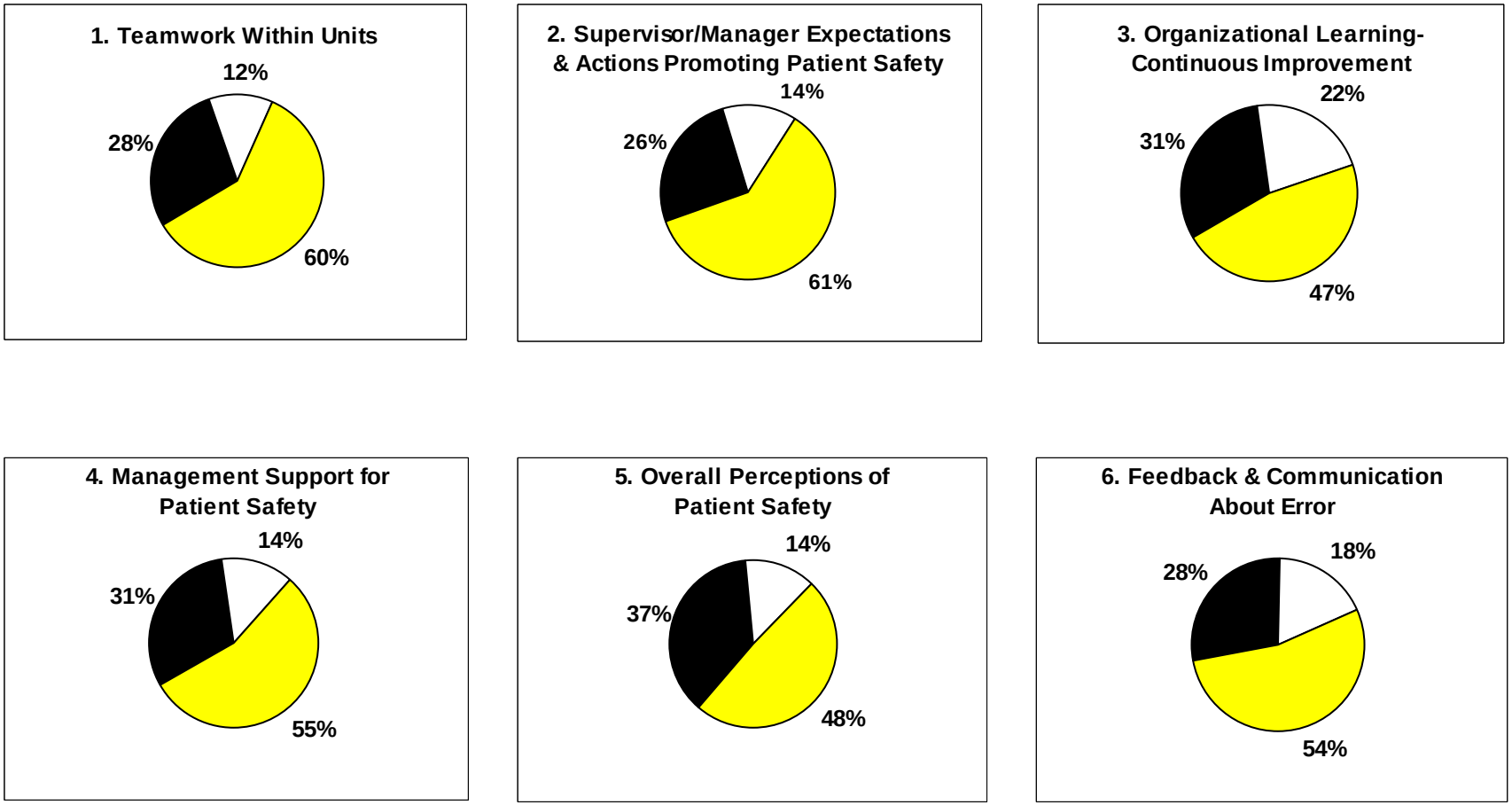
Chart 7-2 displays results for the percent of hospitals that increased, decreased, or did not change by 5 percent or more on the percent of respondents providing patient safety grades of "A-Excellent" or "B-Very Good" and shows that:

- 38 percent of hospitals increased by 5 percent or more;
- 41 percent of hospitals had changes of less than 5 percent; and
- 21 percent of hospitals decreased by 5 percent or more.

Chart 7-3 displays results for the percent of hospitals that increased, decreased, or did not change by 5 percent or more on the percent of respondents reporting one or more events and shows that:

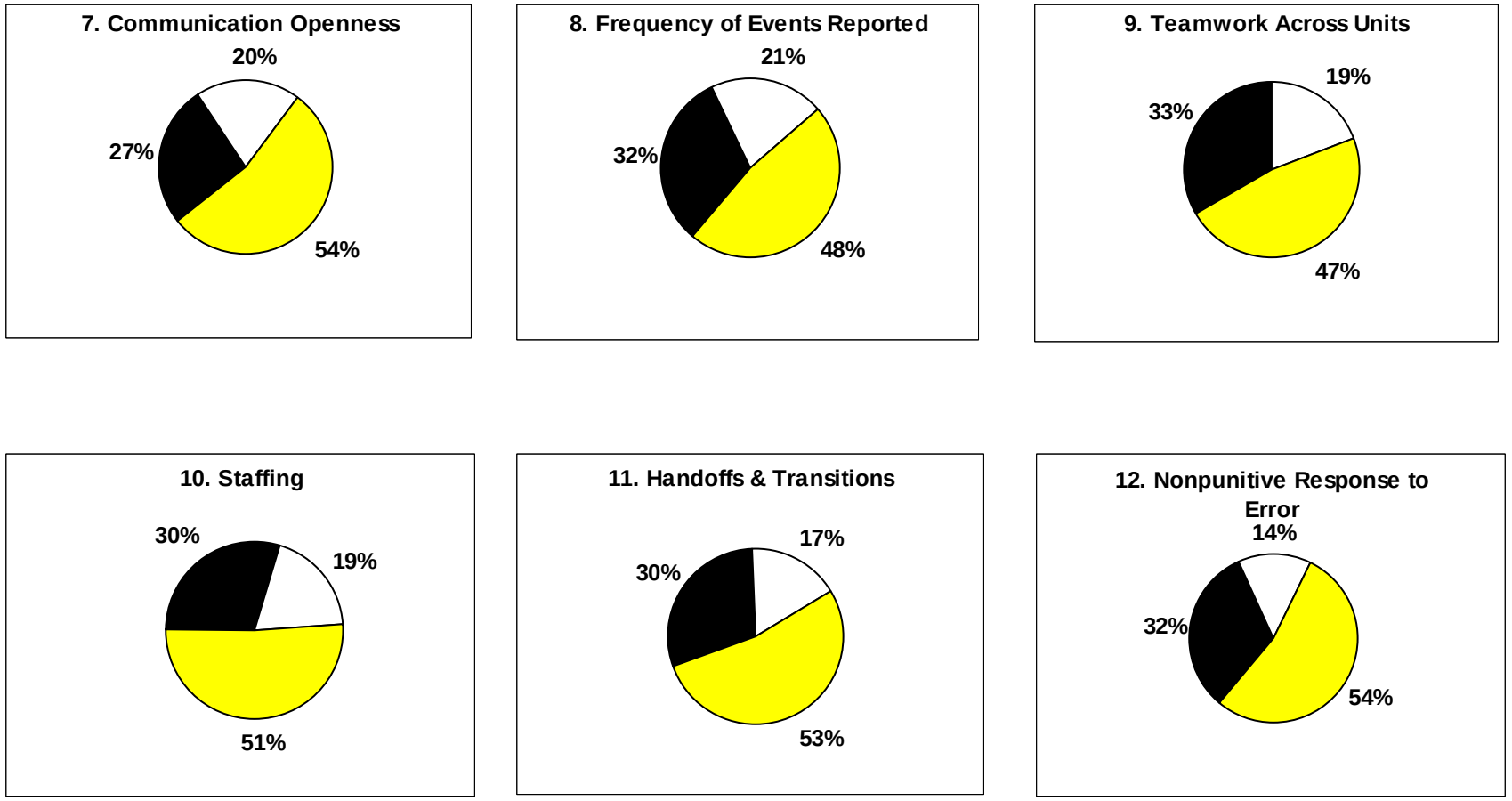
- 32 percent of hospitals increased by 5 percent or more;
- 46 percent of hospitals had changes of less than 5 percent; and
- 23 percent of hospitals decreased by 5 percent or more.

Chart 7-1. Trending: Percentage of Hospitals that Increased, Decreased, or Did Not Change by 5 Percent at Composite Level (Page 1 of 2)



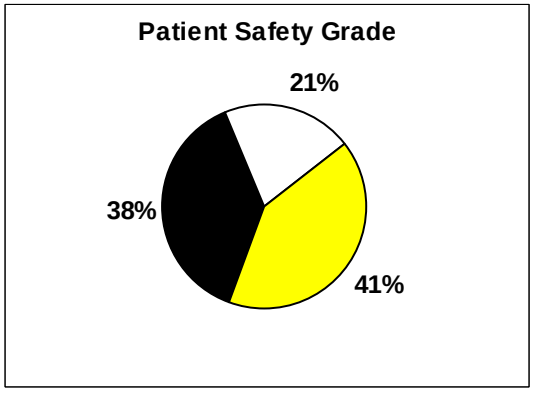
Note: Based on 204 hospitals that repeated survey administration and data submission.

Chart 7-1. Trending: Percentage of Hospitals that Increased, Decreased, or Did Not Change by 5 Percent at Composite Level (Page 2 of 2)



Note: Based on 204 hospitals that repeated survey administration and data submission.

Chart 7-2. Trending: Percentage of Hospitals that Increased, Decreased, or Did Not Change by 5 Percent on Work Area/Unit Patient Safety Grade

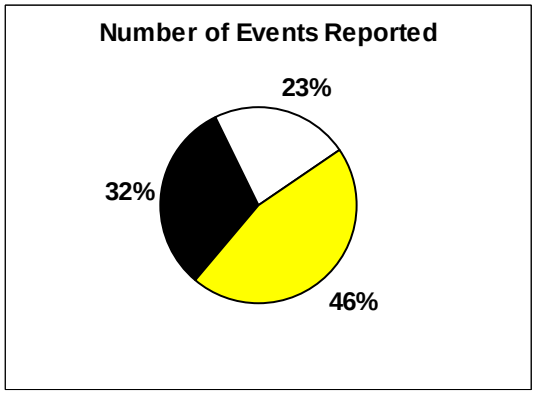


Percentage of Hospitals that:

Increased 5% or more | Decreased 5% or more | Did Not Change (<5%)

Note: When determining change over time, percentages for patient safety grades "Excellent" and "Very Good" were combined.

Chart 7-3. Trending: Percentage of Hospitals that Increased, Decreased, or Did Not Change by 5 Percent on Number of Events Reported



Percentage of Hospitals that:

Increased 5% or more | Decreased 5% or more | Did Not Change (<5%)

Note: When determining change over time, percentages of respondents who reported 1 or more events over the past 12 months were combined.

Additional Trending Analyses

The following sections present quantitative and qualitative data on changes in patient safety culture over time. The quantitative data includes questionnaire data on actions taken by the trending hospitals to improve their patient safety culture, as well as correlational analyses of the actions taken with changes to *Hospital Survey on Patient Safety Culture (HSOPS)* scores. The qualitative data consists of findings from nine interviews conducted with trending hospital staff and suggest explanations for increases and decreases hospitals' HSOPS scores.

Actions Taken by the Trending Hospitals

One hundred and sixty-five of the 204 trending hospitals (that administered the patient safety culture survey and submitted data more than once) provided basic information about the types of patient safety actions they had taken in between their previous and most recent survey administrations.

Most of the trending hospitals (153 hospitals or 93 percent) reported that they had shared their previous survey results with hospital administrators. In addition, 76 percent (125 hospitals) reported they had also shared their previous survey results with hospital staff, but fewer had shared the results with their Board of Directors (100 hospitals or 61 percent) or with physicians (100 hospitals or 61 percent). Table 7-10 shows the percentages of trending hospitals that reported they had implemented various types of actions. The action most frequently taken was implementing SBAR (95 hospitals or 58 percent). About 10 percent (17 hospitals) indicated they had developed action plans but had not implemented them yet.

Most of the trending hospitals (151 hospitals or 92 percent) indicated they had implemented more than one action. Hospitals described the types of "other" actions implemented, such as: Patient Safety Champion/Representative programs; color-coded wristbands; hand hygiene programs; electronic medical record; medication error reduction strategies; and many other actions. Given that the average length of time between survey administrations was 16 months, it appears that the trending hospitals were able to begin implementation of these activities within a relatively short period of time after their previous survey administration.

Table 7-10. Types of Patient Safety Actions Taken by the 2009 Trending Hospitals

Type of Action Taken	2009 Trending Hospitals*	
	Number	Percent
Implemented SBAR Communication (Situation-Background-Assessment-Recommendation)	95	58%
Made changes to policies/procedures	92	56%
Implemented patient safety walkarounds	84	51%
Conducted training	81	49%
Improved compliance with Joint Commission National Patient Safety Goals	65	39%
Conducted chart audits	63	38%
Improved fall prevention program	62	38%
Other action taken	59	36%
Conducted root cause analysis	58	35%
Improved error reporting system	54	33%
Purchased new hospital equipment	52	32%
Held education/patient safety fair for staff	48	29%
Formed a committee	42	25%
Conducted follow-up interviews/focus groups	29	18%
Implemented patient safety bulletin board/ suggestion box/hotline	24	15%
Implemented "Ticket to Ride" communication tool to reduce handoff risk	19	12%
Developed action plans but have not implemented them yet	17	10%
Implemented patient safety briefing(s)	16	10%
Implemented TeamSTEPPS	8	5%

*Only 165 of the 204 trending hospitals provided information about patient safety actions they had taken.

Correlational Analyses

To explore potential reasons why some hospitals had increases in their patient safety culture scores over time, we examined the relationship between hospital characteristics-- such as bed size, ownership, and teaching status--and changes in patient safety culture scores over time. Relationships were examined by calculating correlations between hospital characteristics and the number of composites increasing by 5 percent or more per hospital. In addition, hospital characteristics were correlated with the percent change in respondents giving their hospital a patient safety grade of 'Excellent' or 'Very Good' and the percent change in respondents reporting one or more events. Correlations (r) are a type of statistic that convey the extent to which two variables have a linear relationship. Correlations range from a low of 0 to a high of 1.00 and can be either positive or negative. The closer the correlation is to 1.00 (or -1.00), the greater the degree of association between the variables. A correlation is considered statistically significant or not due to chance when the p-value is less than .05 (p <.05).

The following relationships were found between hospital characteristics and changes in patient safety culture scores. These findings should be considered preliminary, as they are based on a relatively small sample of 204 trending hospitals.

- The smaller the hospital bed size, the greater the number of patient safety culture composites that increased by at least 5 percent (correlation: $r = -.21$, $p < .05$) and the greater the increase in respondents reporting one or more events ($r = -.19$, $p < .05$).

- Non-teaching hospitals tended to increase by 5 percent or more on the composites than teaching hospitals ($r = .15$, $p < .05$) and tended to have greater increases in respondents reporting one or more events than teaching hospitals ($r = .17$, $p < .05$).

- Government hospitals tended to have greater increases in respondents giving their hospital a patient safety grade of 'Excellent' or 'Very Good' ($r = .17$, $p < .05$), and respondents reporting one or more events ($r = .20$, $p < .05$) than non-government hospitals.

We also examined whether hospitals that improved on *Nonpunitive Response to Error* also had increases in the number of respondents who reported at least one event in the past 12 months. This finding was supported; hospitals that increased their percent positive score on *Nonpunitive Response to Error* also tended to have an increase in the number of respondents who reported at least one event in the past 12 months (correlation: $r = .14$, $p < .05$).

Interview Findings

To gain a better understanding of changes in patient safety culture and patient care practices over time, HSOPS project team members conducted hour-long telephone interviews with staff from nine hospitals that administered the HSOPS more than once. Six of the hospitals experienced notable increases in their scores, and three hospitals experienced notable decreases. Most interview participants were quality/risk managers, and one was a chief executive officer. The nine hospitals varied with respect to system affiliation, bed size, teaching status, ownership, and geographic region.

Explanations for notable increases in HSOPS scores. During the interviews, participants were asked why their hospitals' HSOPS scores increased. Some participants mentioned specific actions including implementing the SBAR communication tool for unit-to-unit transfers, hiring a consultant group to work with department directors on targeted patient safety problems, addressing staffing requirements such as filling nursing vacancies and improving patient/staff ratios, and using and displaying scorecards to monitor progress on hospital initiatives. Generally, various themes emerged from their responses. These themes are shared here, along with participants' comments about actions taken by their hospitals to improve patient safety culture and safe patient care practices. Four main themes emerged from those hospitals with notable increases in their HSOPS scores.

Theme 1: Hospitals improved their communication between management and staff on patient safety.

Sample Actions and Illustrative Quotes

- Conducted walkarounds to learn about staff concerns about patient safety
- Focused on patient safety during staff meetings
  - One participant attributed her hospital's improvement to *"the engagement of our department heads and nursing coordinators in making sure patient safety culture is on everyone's mind."*
- Started conducting monthly staff meetings
- Implemented Open Book Management and participated in biweekly "huddles" to review the hospital budget, financial statements, and discuss patient safety issues and concerns
  - *"Open Book Management has had the biggest impact of all their initiatives…affected everything we do…employees are much more aware."*

Theme 2: Hospitals focused on improving error reporting systems, responding appropriately to reports, and applying nonpunitive "Just Culture" principles.

Sample Actions and Illustrative Quotes

- Educated hospital leaders on making error reporting anonymous, easy, and convenient
  - *"When we went from a paper system to an electronic system, our reporting increased about 40 percent – part of it was education, because we had to do a lot of education as we rolled out the electronic system – part of it…is because it's very easy."*
- Set up a hotline for reporting errors and developed anonymous reporting forms for medical errors
  - *"We got management to buy into that it was okay for a staff person to not provide their name, so they wouldn't be afraid to report."*
- Trained staff to use the new reporting systems
- Provided training on "Just Culture" and taught managers to use an algorithm when examining patient safety error incidents
  - *"The algorithm helps management more than anything else."*

Theme 3: Hospitals engaged staff in developing solutions to patient safety problems.

Sample Actions and Illustrative Quotes

- Directly involved staff in designing solutions to handoff problems
- Started an employee engagement committee that includes senior leaders
- Instituted nursing peer review to promote open communication
  - *"I personally think it is a combination of the employee engagement committee where employees have a voice. I think it's the peer review…having peers to go to, to voice your concerns."*
- Assigned staff to a scheduling team to accommodate staff preferences
- Allocated resources for safety needs identified by staff—for example, buying safer beds

Theme 4: Hospitals developed, implemented, and monitored action plans, in some cases focusing on specific survey items.

Sample Action

- Charged department managers with developing and implementing an annual action plan and held them accountable

Explanations for notable decreases in HSOPS scores. Hospital participants provided the following explanations as possible reasons for decreases in their HSOPS scores in their most recent administration of the survey.

- Experienced issues among staff with specific managers and management styles, especially regarding managers' response to incident reports and lack of follow up on staff feedback
  - *"They felt like the managers really didn't act on them [incident reports] or hear them or do anything about them…"*
- Had contracting issues and high turnover for managers and frontline staff – staff have had to get used to new unit managers; some new managers were not familiar with hospital policies on "Just Culture"
- Needed to temporarily shut down hospital services because contract and financial constraints led to a large shortage of professional providers
  - *"The staffing issue came up as part of contract problems. We're in a fairly isolated area, and we have a vacancy rate in the professional provider staff of about 40%. During this time frame we also changed financial management systems. We're not able to hire contractors with the speed that we had in the past. We ended up running very short and ended up closing beds and shutting services down for about an 18-month period."*
- Drilled down in the survey data and observed that scores were lower for larger than smaller units – attributed the lower scores to less frequent and personal communications, weaker sense of accountability to coworkers
- Were in the middle of union negotiations and staff were feeling hostile
- Struggled with organizational learning - how much information can be fed back to staff given confidentiality requirements and concerns?
  - *"As we run into significant adverse events for patients, how much do we feed the information back to frontline staff? Where's that line of keeping it confidential yet sharing our learnings with staff?"*

Appendixes C & D:
Trending Results by Hospital and Respondent Characteristics

Part III of the report contains Appendixes C and D that show trends over time for the 204 hospitals that administered the survey and submitted data more than once. Average percent positive scores from the most recent and previous administrations are shown on the survey composites and items, broken down by the following hospital and respondent characteristics:

Appendix C: Trending Results by Hospital Characteristics

- Bed size
- Teaching status
- Ownership and control

Appendix D: Trending Results by Respondent Characteristics

- Work area/unit
- Staff position
- Interaction with patients

Because there are many breakout tables, they are included in Appendixes C and D. Highlights of the findings from the breakout tables in these appendixes are provided on the following pages.

Note: Because there were fewer than 20 trending hospitals in several hospital region breakout categories, trending results are not shown by hospital region to ensure hospital confidentiality.

Highlights from Appendix C: Trending Results by Hospital Characteristics

Bed Size (Tables C-1, C-3, C-4)

- Hospitals with 100-299 beds had the largest increases in percent positive response over time on 10 of the 12 patient safety culture composites (average increase across the 10 composites was 5 percent).
- Hospitals with 200-299 beds had the greatest average change across the 12 patient safety culture composites (average 5 percent change).
- The largest increase over time was for medium-large hospitals (200-299 beds) on *Teamwork Within Units* and *Organizational Learning—Continuous Improvement*, both increasing 8 percent from the previous administration.
- The largest decrease over time was for large hospitals (500 or more beds) on the *Overall Perceptions of Patient Safety*, decreasing 6 percent from the previous administration.
- Small hospitals (6-24 beds) had the highest increase in percent of respondents who gave their work area/unit a patient safety grade of "Excellent" or "Very good" (a 7 percent increase, from 71 percent in the previous administration to 78 percent in the most recent administration).
- Small hospitals (6-24 beds) also had the highest increase in percent of respondents reporting one or more events in the past year (a 6 percent increase, from 41 percent to 47 percent).

Teaching Status, and Ownership and Control (Tables C-5, C-7, C-8)

- There were no noticeable differences or changes across the patient safety culture composites for teaching versus non-teaching hospitals or government-owned versus non-government hospitals (all changes and differences were 4 percent or less).
- Non-teaching hospitals had a greater increase than teaching hospitals in the percent of respondents who gave their work area/unit a patient safety grade of "Excellent" or "Very good" (a 5 percent increase, from 69 percent to 74 percent).
- Government-owned hospitals had a greater increase than non-government hospitals in the percent of respondents who gave their work area/unit a patient safety grade of "Excellent" or "Very good" (a 6 percent increase, from 69 percent to 75 percent).
- There were no noticeable differences or changes on the percent of respondents who reported one or more events in the past year based on teaching status.
- Government-owned hospitals had a greater increase than non-government hospitals in the percent of respondents who reported one or more events in the past year (a 5 percent increase, from 42 percent to 47 percent).

Highlights from Appendix D: Trending Results by Respondent Characteristics

Work Area/Unit (Tables D-1, D-3, D-4)

- Respondents in *Psych/Mental Health* had the greatest average change in percent positive response across the 12 patient safety culture composites, with an average change of 5 percent.
- Respondents in *Obstetrics* had the largest increases in positive response over time on 5 of the 12 patient safety culture composites (average increase across the 5 composites was 6 percent).
- Respondents in *Anesthesiology* had the largest decreases in positive response over time on 4 of the 12 patient safety culture composites (average decrease across the 4 composites was 5 percent).
- *Medicine* had the largest average percent of respondents who increased over time in giving their work area/unit a patient safety grade of "Excellent" or "Very good" (an 8 percent increase from 56 to 64 percent), followed by *ICU* (7 percent increase), *Surgery* (6 percent increase), and *Lab* (5 percent increase).
- *Lab* had the largest average percent of respondents who increased over time in their reporting of one or more events in the past year (a 7 percent increase: from 48 to 55 percent) followed by *Anesthesiology, Radiology,* and *Rehabilitation* (all increasing by 5 percent); the largest decrease in percent reporting was in *Obstetrics* (a 6 percent decrease from 58 to 52 percent).

Staff Position (Tables D-5, D-7, D-8)

- *Pharmacists* had the largest increases in positive response over time on 4 of the 12 patient safety culture composites (average increase across the 4 composites was 6 percent).
- *Admin/Mgmt, RN/LVN/LPN, and Technicians* had the largest average percent of respondents who increased over time in giving their work area/unit a patient safety grade of "Excellent" or "Very good" (5 percent increases).
- There were no noticeable differences in the percent of respondents reporting one or more events over time based on staff position (all changes over time were less than +/- 5 percent).

Interaction with Patients (Tables D-9, D-11, D-12)

- There were no noticeable composite differences over time based on respondent interaction with patients (all were increases over time of 4 percent or less).
- There were no noticeable differences in the percent of respondents giving their work unit/area a patient safety grade of "Excellent" or "Very good" or those reporting one or more events over time based on respondent direct patient interaction.

Chapter 8. What's Next? Action Planning for Improvement

After the initial release of the *Hospital Survey on Patient Safety Culture* in November of 2004, AHRQ held a series of national conference calls to provide technical assistance and guidance to hospitals interested in administering the survey. The seven steps of action planning outlined in this chapter are primarily based on the third conference call presentation by an organizational psychologist (Church, 2005; available on the AHRQ web site at (www.ahrq.gov/qual/hospculture), and based on the book "Designing and Using Organizational Surveys: A Seven-Step Process" (Church & Waclawski, 1998).

Highlights

- The delivery of survey results is not the *end point* in the survey process, it is just the *beginning.*
- It is often the case that the perceived failure of surveys to create lasting change is actually due to faulty or nonexistent action planning or survey follow-up.
- Seven steps of action planning are provided to give hospitals guidance on next steps to take to turn their survey results into actual patient safety culture improvement.

Seven Steps of Action Planning

While administering the *Hospital Survey on Patient Safety Culture* can be considered an "intervention"—a means of educating hospital staff and building awareness about issues of concern related to patient safety—this should not be the only goal of conducting the survey. Administering the survey is not enough. Keep in mind that the delivery of survey results is not the *end point* in the survey process, it is actually just the *beginning*. It is often the case that the perceived failure of surveys as a means for creating lasting change is actually due to faulty or nonexistent action planning or survey follow-up. Seven steps of action planning are provided to help your hospital go beyond simply conducting a survey to realizing patient safety culture change.

Step # 1: Understand Your Survey Results

It is important to review the survey results and interpret them before you develop action plans. Develop an understanding of your hospital's key strengths and areas for improvement. Examine your hospital's overall percent positive scores on the patient safety culture composites and items:

- Which areas were most and least positive?
- How do your hospital's results compare to the results from the database hospitals?

Next, consider examining your survey data broken down by work area/unit or staff position.

- Are there different areas for improvement for different hospital units?
- Are there different areas for improvement for different hospital staff?
- Do any patterns emerge?
- How do your hospital's results for these breakouts compare to the results from the database hospitals?

Finally, if your hospital administered the survey more than once, compare your most recent results to your previous results to examine change over time.

- Did your hospital have an increase in its scores on any of the survey composites or items?
- Did your hospital have a decrease in its scores?
- When you consider the types of patient safety actions that your hospital implemented between each survey administration, do you notice improvements in those areas?

After reviewing the survey results carefully, identify two to three areas for improvement at the hospital level. While your hospital may want to improve in almost all areas, it is better to avoid focusing on too many issues at one time.

Step # 2: Communicate and Discuss the Survey Results

Common complaints among survey respondents are that they never get any feedback about survey results and have no idea whether anything ever happens as a result of a survey. It is therefore important to thank your staff for taking the time to complete the survey and let them know that you value their input. Sharing results from the survey throughout the hospital shows your commitment to the survey and improvement process.

Use survey feedback as an impetus for change. Feedback can be provided at the hospital level and/or at the department or unit level. However, to ensure respondent anonymity/ confidentiality, it is important to only report data if there are enough respondents in a particular category or group. One common rule-of-thumb recommends not reporting data if there are fewer than 10 respondents in a category. For example, if there are only 4 respondents from a department, that department's data should not be reported separately because there are too few respondents to provide complete assurance of anonymity/confidentiality.

Summaries of the survey results should be distributed throughout the hospital in a top-down manner beginning with senior management, administrators, medical and senior leaders, and committees, followed by department or unit managers and then staff. Managers at all levels should be expected to carefully review the findings. Summarize key findings, but also encourage discussion about the results throughout the hospital. What do others see in the data and how do they interpret the results?

In some cases, it may not be completely clear why an area of patient safety culture was particularly low. Keep in mind that surveys are only one way of examining culture, so strive for a deeper understanding when needed, by conducting follow-up activities such as focus groups or interviews with staff to find out more about an issue, why it is problematic, and how it can be improved.

Step # 3: Develop Focused Action Plans

Once areas for patient safety culture improvement have been identified, formal, written action plans need to be developed to ensure progress toward change. Hospital-wide and department- or unit-based action plans can be developed. Major goals can be established as hospital-wide action plans. Unit-specific goals can be fostered by encouraging and empowering staff to develop action plans at the unit level.

Encourage action plans that are "SMART":

- Specific
- Measurable
- Achievable
- Relevant
- Time-bound

Identify funding or other resources needed to implement action plans. It is also important to identify quantitative and qualitative measures that can be used to evaluate progress and the impact of changes implemented.

Step # 4: Communicate Action Plans and Deliverables

Once action plans have been developed, the plans, deliverables and expected outcomes of the plans need to be communicated. Those directly involved or affected will need to know their roles, responsibilities, and the time frame for implementation. Action plans and goals should also be shared widely so that their transparency encourages further accountability and demonstrates the hospital-wide commitments being made in response to the survey results.

At this step it is important for senior hospital managers and leaders to understand that they are the primary owners of the change process and that success depends on their full commitment and support. Senior-level commitment to taking action must be strong; without buy-in from the top, including medical leadership, improvement efforts are likely to fail.

Step # 5: Implement Action Plans

Implementing action plans is one of the hardest steps. Taking action requires the provision of necessary resources and support. It requires tracking quantitative and qualitative measures of progress and success that have already been identified. It requires publicly recognizing those individuals and units that take action to drive improvement. And it requires adjustments along the way.

This step is critical to realizing patient safety culture improvement. While communicating the survey results is important, taking action makes the real difference. However, as the Institute for Healthcare Improvement (IHI, 2006) suggests, actions do not have to be major, permanent changes that are enacted. In fact, it is worthwhile to strive to implement easier, smaller changes that are likely to have a positive impact rather than big changes with unknown probability of success.

The "Plan-Do-Study-Act" cycle (Langley et al, 1996) is a pilot-study approach to change that involves first developing a small-scale plan to test a proposed change (Plan), carrying out the plan (Do), observing and learning from the consequences (Study), and determining what modifications should be made to the plan (Act). Implementation of action plans can occur on a small scale, within a single unit, to examine impact and refine plans before rolling out the changes on a larger scale to other units or hospitals.

Step # 6: Track Progress and Evaluate Impact

Use quantitative and qualitative measures to review progress and evaluate whether a specific change actually leads to improvement. Ensure that there is timely communication of progress toward action plans on a regular basis. If you determine that a change has worked, communicate that success to staff by telling them what was changed, and that it was done in response to the safety culture survey results. Be sure to make the connection to the survey so that the next time the survey is administered, staff will know that it will be worthwhile to participate again because actions were taken based on the prior survey's results. Alternatively, your evaluation may discover that a change is not working as expected or has failed to reach its goals and will need to be modified or replaced by another approach. Before dropping the effort completely, try to determine why it failed and whether adjustments might be worth trying.

Keep in mind that it is important not to reassess culture too frequently because lasting culture change will be slow and may take years. Frequent assessments of culture are likely to find temporary shifts or improvements that may come back down to baseline levels in the longer term if changes are not sustained. When planning to reassess culture, it is also very important to obtain high survey response rates. Otherwise, it will not be clear whether changes in survey results over time are due to true changes in attitudes, or due to the fact that you may be surveying different staff each time.

Step # 7: Share What Works

In step six, you tracked measures to be able to identify which changes result in improvement. Once your hospital has found effective ways to address a particular area, the changes can be implemented on a broader scale to other departments within the hospital and to other hospitals. Be sure to share your successes with outside hospitals and healthcare systems as well.

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Notes: Description of Data Cleaning and Calculations

This notes section provides additional detail regarding how various statistics presented in this report were calculated.

Data Cleaning

Each participating hospital was asked to submit cleaned, individual-level survey data. However, as an additional check, once the data were submitted, response frequencies were run on each hospital's data to look for out-of-range values, missing variables, or other data anomalies. In instances where data problems were found, hospitals were contacted, asked to make corrections and resubmit their data. In addition, each participating hospital was sent a copy of their data frequencies as an additional way for the hospitals to verify that the dataset received was correct.

Response Rates

As part of the data submission process, hospitals were asked to provide their response rate numerator and denominator. Response rates were calculated using the formula below.

$$\textbf{Response Rate} = \frac{\textbf{Number of complete, returned surveys}}{\textbf{Number of surveys distributed – Ineligibles}}$$

Numerator = Number of complete, returned surveys. The numerator equals the number of individual survey records submitted to the database. It should exclude surveys that were returned blank on all non-demographic survey items, but include surveys where at least one non-demographic survey item was answered.

Denominator = The total number of surveys distributed minus ineligibles. Ineligibles include deceased individuals or those who were not employed at the hospital during data collection.

As a data cleaning step, we examined whether any individual survey records submitted to the database were missing responses on all of the non-demographic survey items (indicating the respondent did not answer any of the main survey questions). Records where all non-demographic survey items were left blank by the respondent were found (even though these blank records should not have been submitted to the database). We therefore removed these blank records from the larger dataset and adjusted any affected hospital's response rate numerator and overall response rate accordingly.

Item and Composite Percent Positive Scores

To calculate your hospital's composite score, simply average the percent of positive response on each item that is in the composite. Here is an example of computing a composite score for *Overall Perceptions of Patient Safety*:

1. There are four items in this composite—two are positively worded (items # A15 and # A18) and two are negatively worded (items # A10 and # A17). Keep in mind that DISAGREEING with a negatively worded item indicates a POSITIVE response.

2. Calculate the percent of positive response at the item level (see example in Table 1).

Table 1. Example of Computing Item and Composite Percent Positive Scores

Four items measuring "Overall Perceptions of Patient Safety"	For positively worded items, count the # of "Strongly agree" or "Agree" responses	For negatively worded items, count the # of "Strongly disagree" or "Disagree" responses	Total # of responses to the item	Percent positive response on item
Item A15-positively worded "Patient safety is never sacrificed to get more work done"	120	NA*	260	120/260=46%
Item A18-positively worded "Our procedures and systems are good at preventing errors from happening"	130	NA*	250	130/250=52%
Item A10-negatively worded "It is just by chance that more serious mistakes don't happen around here"	NA*	110	240	110/240=46%
Item A17-negatively worded "We have patient safety problems in this unit"	NA*	140	250	140/250= 56%
* NA = Not applicable	**Composite Score % Positive =** (46% + 52% + 46% + 56%) / 4 = **50%**			

In this example, there were 4 items with percent positive response scores of 46 percent, 52 percent, 46 percent, and 56 percent. Averaging these item-level percent positive scores results in a composite score of .50 or 50 percent on Overall Perceptions of Patient Safety. In this example, an average of about 50 percent of the respondents responded positively on the survey items in this composite.

Once you have calculated your hospital's percent positive response on each of the 12 safety culture composites, you can compare your results with the composite-level results from the 622 database hospitals.

Note that the method described above for calculating composite scores is slightly different than the method described in the September 2004 Survey User's Guide that is part of the original survey toolkit materials on the AHRQ web site. The Guide advises computing composites by calculating the overall percent positive across all the items within a composite. The updated recommendation included in this report is to compute item percent positive scores first, and then average the item percent positive scores to obtain the composite score, which gives equal weight to each item in a composite. The Survey User's Guide will eventually be updated to reflect this slight change in methodology.

Percentiles

Percentiles were computed using the SAS® Software default method. The first step in this procedure is to rank order the percent positive scores from all the participating hospitals, from

lowest to highest. The next step is to multiply the number of hospitals (n) by the percentile of interest (p), which in our case would be the 10^{th}, 25^{th}, 50^{th}, 75^{th} or 90^{th} percentile.

For example, to calculate the 10^{th} percentile, one would multiply 622 (the total number of hospitals) by .10 (10^{th} percentile). The product of n x p is equal to "j+g" where "j" is the integer and "g" is the number after the decimal. If "g" equals 0, the percentile is equal to the percent positive value of the hospital in the j^{th} position plus the percent positive value of the hospital in the j^{th} +1 position, all divided by two $[(X_{(j)} + X_{(j+1)})/2]$. If "g" is <u>not</u> equal to 0, the percentile is equal to the percent positive value of the hospital in the j^{th} +1 position.

The following examples show how the 10^{th} and 50^{th} percentiles would be computed using a sample of percent positive scores from 12 hospitals (using fake data shown in Table 2). First, the percent positive scores are sorted from low to high on Composite "A."

Table 2. Data Table for Example of How to Compute Percentiles

Hospital	Composite "A" % Positive Score	
1	33%	
2	48%	←10^{th} percentile score = 48%
3	52%	
4	60%	
5	63%	
6	64%	←50^{th} percentile score = 65%
7	66%	
8	70%	
9	72%	
10	75%	
11	75%	
12	78%	

10^{th} percentile

1. For the 10^{th} percentile, we would first multiply the number of hospitals by .10 (n x p = 12 x .10 = 1.2).
2. The product of n x p = 1.2, where "j" = 1 and "g" = 2. Since "g" is <u>not</u> equal to 0, the 10^{th} percentile score is equal to the percent positive value of the hospital in the j^{th} +1 position:
    a. "j" equals 1
    b. The 10^{th} percentile equals the value for the hospital in the 2^{nd} position = 48%

50^{th} percentile

1. For the 50^{th} percentile, we would first multiply the number of hospitals by .50 (n x p = 12 x .50 = 6.0).
2. The product of n x p = 6.0, where "j" = 6 and "g" = 0. Since "g" = 0, the 50^{th} percentile score is equal to the percent positive value of the hospital in the j^{th} position plus the percent positive value of the hospital in the j^{th} +1 position, all divided by two:
    a. "j" equals 6
    b. The 50^{th} percentile equals the average of the hospitals in the 6^{th} and 7^{th} position (64%+66%)/2 = 65%