

**Illinois Hospital Report Card
And
Consumer Guide to Health
Care**

**Report to the General
Assembly: Fiscal Year 2015**

(July 1, 2014 – June 30, 2015)

**Division of Patient Safety and Quality
Illinois Department of Public Health**

This report highlights data published on the Illinois Hospital Report Card and Consumer Guide to Health Care website (www.healthcarereportcard.illinois.gov). It also provides an overview of key related quality and safety initiatives of the Division of Patient Safety and Quality (the Division) at the Illinois Department of Public Health (IDPH). The Division was established in late 2007 in response to growing national concerns about the quality and safety of health care, reflected locally in the Illinois Hospital Report Card Act (210 ILCS86) and Illinois Health Finance Reform Act (20 ILCS 2215). The Division is responsible for publishing the Illinois Hospital Report Card and Consumer Guide website.

The Division of Patient Safety and Quality is dedicated to fostering improvements in health care quality and patient safety, and raising public awareness through transparent reporting of health care quality measures. Putting the spotlight on health care quality issues helps inform public health policy and can activate changes to improve the health and well-being of our communities. High quality health care should result in positive and targeted health outcomes in communities, be guided by evidence-based best practices, and have cost value.

The Division is responsible for the collection of patient discharge data from Illinois hospitals and ambulatory surgery treatment centers. Collecting, measuring and analyzing data are essential components of the Division's work and facilitate the public reporting of health care quality measures. The Illinois Hospital Report Card and Consumer Guide to Health Care website was developed to provide ready access to these reports to consumers. Data is compiled from an array of sources including the discharge data set, the Illinois Annual Hospital and Ambulatory Surgery Center Profile, Illinois nurse staffing data, the Department of Health and Human Services Centers for Medicare and Medicaid Services, the Centers for Disease Control and Prevention's National Healthcare Safety Network surveillance system, and the Department's Vital Records.

The Illinois Hospital Report Card and Consumer Guide to Health Care (HRCCGH) website has had fifteen releases since its inception in November, 2009. In addition, a newer feature of the website called the Illinois Public Health Community Map was launched in the spring of 2011. This feature examines issues related to quality of health care at the community level and has had five releases. The HRCCGH website currently displays over 175 indicators of quality, safety, utilization and charges for specific procedures and conditions. This report highlights data published on the HRCCGH during the 2014/2015 fiscal year (July 1, 2014 – June 30, 2015) and associated patient safety and quality initiatives. During this time, the website received an average of approximately 4300 visits per month. Approximately 76 percent of visitors were new to the site. For more detailed reports, please visit the HRCCGH web site directly at www.healthcarereportcard.illinois.gov.

In March of 2011, the Department of Health and Human Services released the "National Strategy for Quality Improvement in Health Care", a strategic plan to guide the nation in increasing access to high quality, affordable health care for all Americans (1). The National Strategy promotes three broad aims and six priorities for quality improvement. The three aims are:

1. **Better Care:** Improve the overall quality of care, by making health care more patient-centered, reliable, accessible and safe.

2. **Healthy People/Healthy Communities** : Improve the health of the U.S. population by supporting proven interventions to address behavioral, social and environmental determinants of health in addition to delivering higher-quality care.
3. **Affordable Care**: Reduce the cost of quality health care for individuals, families, employers, and government.

The six priorities of the National Quality Strategy are:

1. **Patient Safety** – Making care safer by reducing harm caused in the delivery of care.
2. **Person and Family-Centered Care** – Ensuring that each person and family are engaged as partners in their care.
3. **Effective Communication and Care Coordination** – Promoting effective communication and coordination of care.
4. **Prevention and Treatment of Leading Causes of Mortality** – Promoting the most effective prevention and treatment practices for the leading causes of mortality, starting with cardiovascular disease.
5. **Health and Well-Being** – Working with communities to promote wide use of best practices to enable healthy living.
6. **Affordable Care** – Making quality care more affordable for individuals, families, employers, and governments by developing and spreading new health care delivery models.

The HRCCGHC web site provides an array of measures that examine the quality and value of health care, and the Public Health Community Map feature examines issues of health quality at the community level in the context of social determinants of health. A compilation of data that highlights these issues is provided below using the framework of the National Quality Strategy six priorities for quality improvement. Statewide data is provided, and is compared to national benchmarks when possible. Some data can be found on the Centers for Medicare and Medicaid Services Hospital Compare and other websites, but most of the measures are unique to the HRCCGHC. Special Division quality improvement initiatives are also highlighted.

Patient Safety – Making care safer by reducing harm caused in the delivery of care

Health Care-associated Infections

Health care-associated infections, or HAIs, are infections that patients acquire while they are receiving treatment for other conditions in a health care setting, such as a hospital, nursing home, or community clinic. According to the Centers for Disease Control and Prevention (CDC), HAIs account for over a million infections and some 99,000 deaths annually in the United States. Hospital acquired HAIs alone are estimated to cost in excess of 28 billion dollars in preventable health care expenditures. Many of these infections are preventable with appropriate health care practices. HAIs are a top patient safety concern being addressed nationally. The Department of Health and Human Services issued a national action plan to prevent HAIs in 2009 which was recently updated, and that set specific 5 year target

reduction goals for the top HAIs (2). Health and Human Services, the Center for Medicare and Medicaid Services, the CDC and State public health departments have all collaborated to help drive reduction efforts locally across the country.

To combat health care-associated infections aggressively, the Division of Patient Safety and Quality launched a phased implementation of the CDC's National Healthcare Safety Network (NHSN) surveillance system in Illinois hospitals. The NHSN surveillance system provides the most rigorous and valid method for measuring and monitoring information on HAIs, and has been embraced by the Centers for Medicare and Medicaid Services as the national reporting tool of choice.

The Division staggered hospital implementation of surveillance reporting for individual HAIs over five years, (2008-2012) to allow infection prevention staff at hospitals to become familiar with reporting protocols and requirements. Hospitals now report central line-associated bloodstream infections (CLABSI), surgical site infections (SSI), Methicillin-resistant *Staphylococcus Aureus* (MRSA) and *Clostridium difficile* (CDI) infections to the Division. NHSN surveillance data is published on the Illinois Hospital Report Card and Consumer Guide to Health Care. Data on CLABSI is reported for all hospitals with adult, pediatric and/or neonatal intensive care units and surgical site infection (SSI) data is published for infections associated with coronary artery bypass graft and total knee replacement surgeries. MRSA and CDI data is published facility-wide for all hospitals. NHSN surveillance data is published on the HRCCGH website both individually on unique hospital profiles, as well as in a statewide report.

Illinois has seen significant improvements in four of the five health care-associated infections monitored by the Division as measured by the standardized infection ratio, or SIR. The SIR, is a summary measure that can be used to track HAIs at state and national levels over time. It is used to measure relative differences in HAI occurrence during a given reporting period, compared to a common referent period of national data. The SIR is a ratio of the observed to expected (or predicted) number of health care-associated infections (observed / predicted = SIR). The predicted number of infections is calculated based on national infection data and patient risk at each health facility. A hospital's SIR value is compared to the baseline U.S. experience (i.e. NHSN aggregate 2006-2008 data). If the SIR value is greater than 1.0, there are more infections than expected. If the SIR value is less than 1.0, then fewer infections occurred than expected. If the facility SIR is 1.0, then the number of observed infections is the same as or similar to the national infection rate. (For further information on Standardized Infection Ratios (SIRs), see the methodology section of the Illinois Hospital Report Card website <http://www.healthcarereportcard.illinois.gov/methodology#ir>).

Table 1 below compares Illinois HAI data to the CDC national referent data using the SIR, providing a snapshot of Illinois HAI status overall. Note the reductions for all infections with the exception of *Clostridium difficile* (CDI). This is consistent with national trends. Many health care organizations have successfully implemented quality improvement activities to reduce HAIs. Public reporting and media attention have also stimulated prevention efforts.

Table 1. Change in Illinois HAI SIR compared to CDC National Baseline Referent

HAI Type	2014 State SIR vs. Nat'l Baseline	2014 State SIR
CLABSI: Adult ICU	 54%	0.45
CLABSI: Neonatal ICU	 49%	0.51
CLABSI: Pediatric ICU	 75%	0.25
SSI: Knee Replacement Surgery	 48%	0.52
SSI: Coronary Artery Bypass Surgery	 67%	0.33
MRSA Bacteremia	 29%	0.7
<i>C. difficile</i> Infections	0%	1.0

To examine Illinois trends in HAIs more specifically over time, data for each infection type is summarized below. Trends were analyzed using joinpoint regression version 4.1, a software program developed by the U.S. National Cancer Institute for the analysis of data from the Surveillance Epidemiology and End Results Program (3). Joinpoint regression analysis was used to analyze trends in SIR over time.

In addition, the average annual percent change (AAPC) in SIR values was estimated and reflects the magnitude of the trend during specific reporting periods. The AAPC is tested for statistical significance.

Central Line-associated Bloodstream Infection (CLABSI) Reporting in Illinois Acute Care Hospitals, 2014

Illinois hospitals have been reporting CLABSI data from adult intensive care units (ICU) to the Illinois Department of Public Health (IDPH) using the CDC’s National Healthcare Safety Network (NHSN) since October, 2008. Reporting of CLABSI data from both Pediatric (PICUs) and Neonatal Intensive Care units (NICUs) commenced in October, 2009. A comparison of all Intensive Care Units between 2009 through 2014 showed that fewer CLABSI occurred in Illinois hospitals overall, and the state’s standardized infection ratio for CLABSIs systematically reduced. Trends in CLABSI using Joinpoint regression are shown in Table 2 below.

Table 2. Changes in CLABSI Standardized Infections Ratios (SIRs) in Illinois ICUs from 2009 - 2014

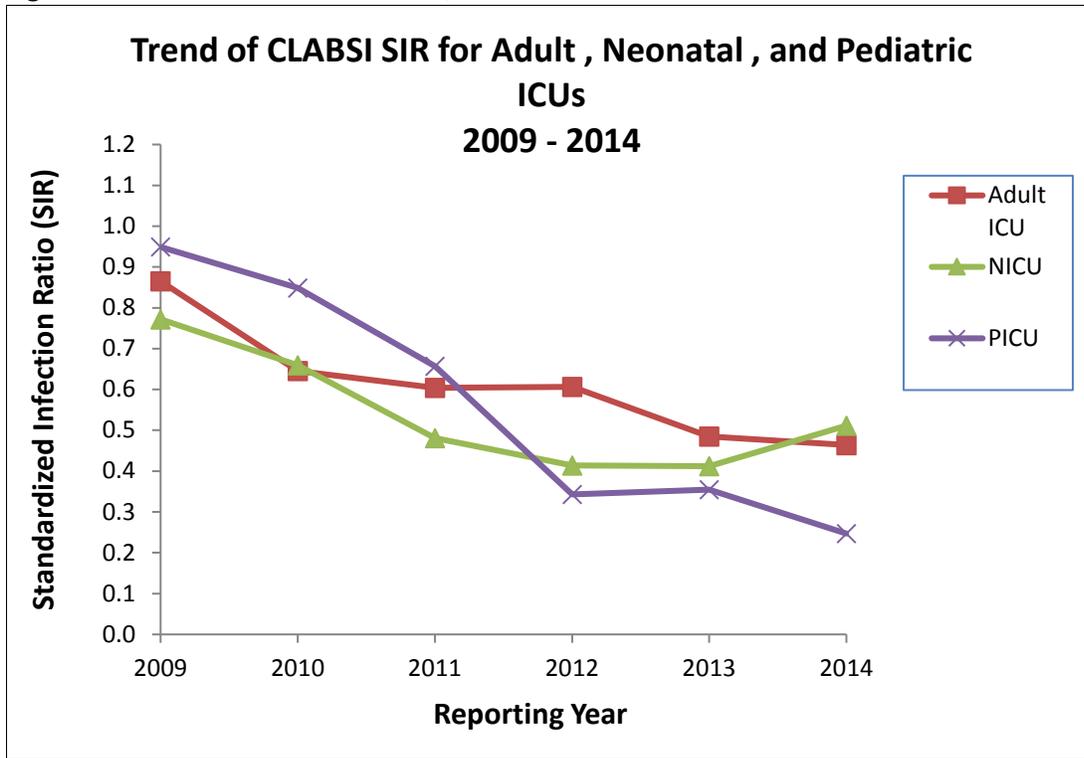
Year	2009	2010	2011	2012	2013	2014	Average Annual Percent Change (AAPC)
All ICUs Combined	0.86	0.67	0.58	0.54	0.46	0.45	-11.99 ^
Adult ICUs	0.87	0.65	0.60	0.61	0.49	0.46	-10.86 ^
NICUs	0.77	0.66	0.48	0.41	0.41	0.51	*
PICUs	0.95	0.85	0.66	0.34	0.36	0.25	-25.72 ^

^ The Average Annual Percent Change (AAPC) is statistically significantly ($p < 0.05$)

* For NICU, one Joinpoint was observed, see Table 3 and Figure 2 for results

Figure 1 shows reductions in CLABSI SIR between 2009 and 2014 for each of the three Intensive Care types – adult, neonatal (NICU), and pediatric (PICU).

Figure 1. SIR of CLABSIs in Adult ICU, Neonatal ICU and Pediatric ICU from 2009 – 2014

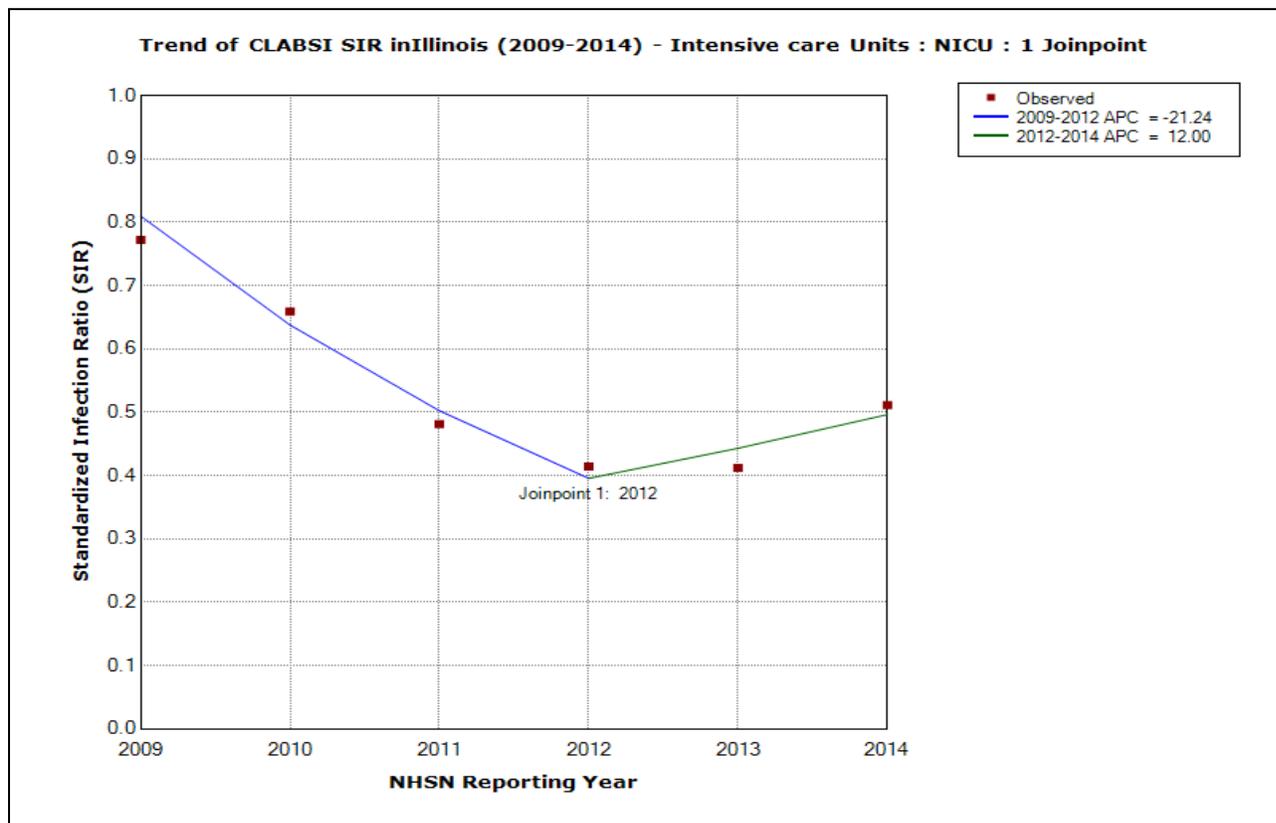


As shown in Figure 1 there is a slight increase in the CLABSI SIR for the NICU from 2012 – 2014. Joinpoint analysis output for the NICU that quantifies the percent increase is displayed in Table 3 and Figure 2 below.

Table 3. Annual Percent Change in CLABSI SIR in Neonatal ICUs, 2009 – 2014

ICU Type	Segment	Annual Percent Change (APC)	Significant Percent Change (SIR)	p-value (APC)
Neonatal ICU	2009-2012	-21.24	Not Statistically Significant	0.1465
	2012-2014	12.00	Not Statistically Significant	0.2038

Figure 2. Joinpoint Analysis of CLABSI SIR in Neonatal ICUs, 2009 – 2014



Summary

The SIR for CLABSIs in Adult ICU, Pediatric ICU, and Neonatal ICU are trended over time in Figures 1 and 2. Joinpoint analysis indicates that the Illinois SIRs for CLABSIs in all intensive care units have been steadily decreasing on average of 12% per year for the 6-year period of 2009 through 2014 (Table 2).

The SIRs for Adult ICU and PICU have seen a steady decrease of 11% and 26% per year, respectively, for this same time period (Table 2). For Neonatal ICU, one significant change point in the data was observed in 2012 (Figure 1). From 2009 through 2011 there was a steady decrease of 21% per year in CLABSI SIR, and then a change point occurred in 2012 as the trend increased through 2014 by an average of 12% per year. This increase, however, is not statistically significant.

Surgical Site Infections

Illinois hospitals have been reporting surgical site infection (SSI) data to the Illinois Department of Public Health (IDPH) using the CDC's National Healthcare Safety Network (NHSN) since April, 2010. SSIs are infections that occur in the wound created by an invasive surgical procedure and are one of the most important causes of healthcare-associated infections (HAI). The surgeries monitored for SSI in Illinois include coronary artery bypass graft (CABG) procedures and knee replacements (KPRO). This report and analysis reflects the January 1, 2013 to June 30, 2014 SSI data of Illinois hospitals that performs CABG. The CDC describes three types of surgical site infections:

- Superficial incisional SSI: This infection occurs just in the area of the skin where the surgical incision was made.
- Deep incisional SSI: This infection occurs beneath the incision area in muscle tissue and in fascia, the tissue surrounding the muscles.
- Organ or space SSI: This type of infection can be in any area of the body other than skin, muscle, and fascia that was involved in the surgery, such as a body organ or a space between organs.

IDPH monitors inpatient procedures and Deep Incisional Primary and Organ/Space SSIs that were identified during admission or readmission to Illinois facilities as defined in the NHSN Manual. Facilities' surgical site infection results are compared using the standardized infection ratio (SIR) as described above.

- ***Coronary Artery Bypass Graft Surgery (CABG) Surgical Site Infections***

As shown below in Table 4 and Figure 3, reductions in CABG SSIs have been observed since Illinois hospitals have started reporting SSI in 2010. The average annual percent change (AAPC) of CABG SSI from 2010 to 2013 was approximately 20% and was statistically significant ($p < 0.05$).

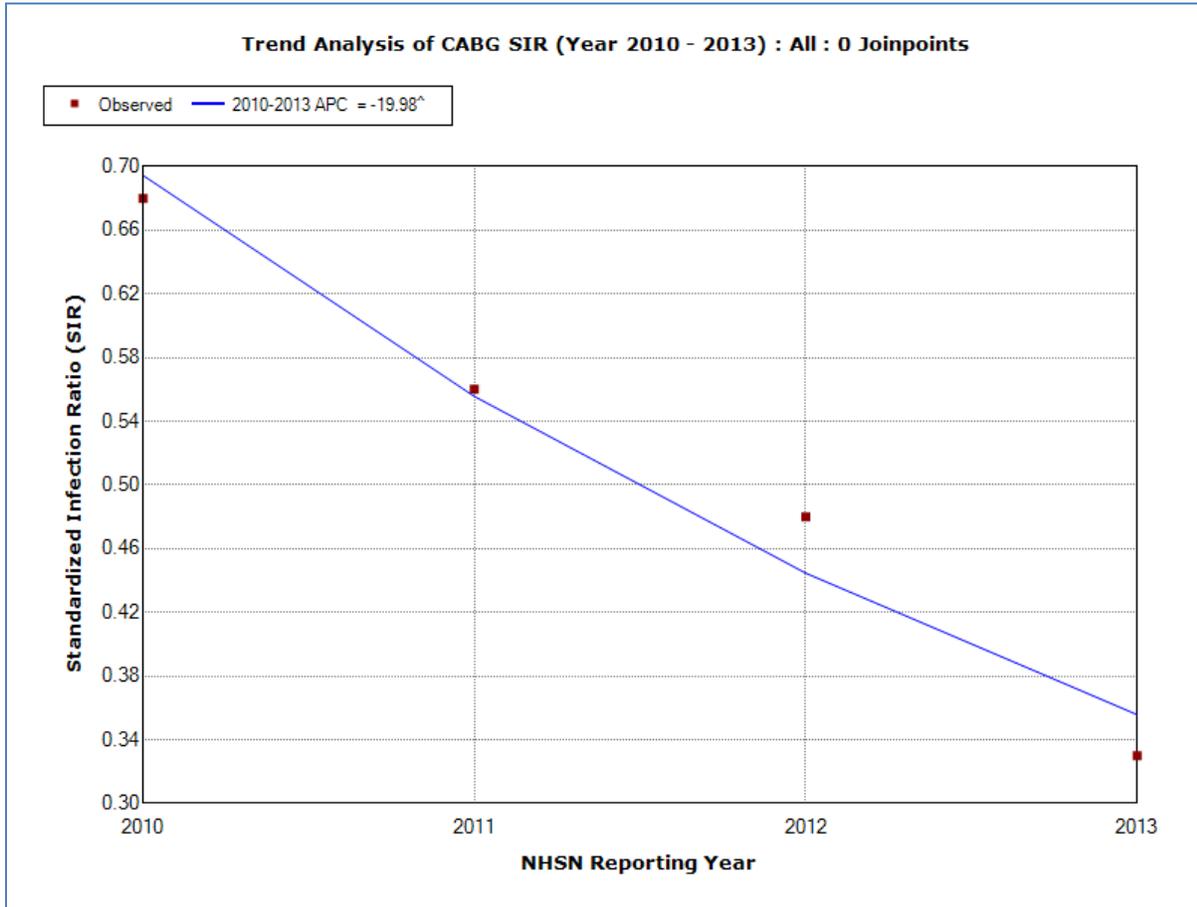
Table 4. Average Annual Percent Change (AAPC) of CABG SSI, 2010-2013

SSI Procedure Type	Year Range	Average Annual Percent Change (AAPC)	95% Confidence Interval		P-Value	Statistical Interpretation
			Lower Limit	Upper Limit		
CABG	2010 - 2013	-19.98 [^]	-30.3	-8.2	0.0200	Significant Decrease

[^] Statistically significant (p< 0.05)

The Illinois SIR values for CABG SSIs are trended over time in Figures 3 below.

Figure 3. Trend of CABG SSI (SIR) in Illinois Hospitals from 2010 - 2013



Summary

CABG SSI trend analysis indicates consistent decreases in the number of CABG SSIs reported in all Illinois hospitals between 2010 and 2013, as reflected in the decreased SIR. This overall average annual percent change of 20% in CABG SSI SIR since 2010 is statistically significant.

- ***Knee Arthroplasty (KPRO) Surgical Site Infections***

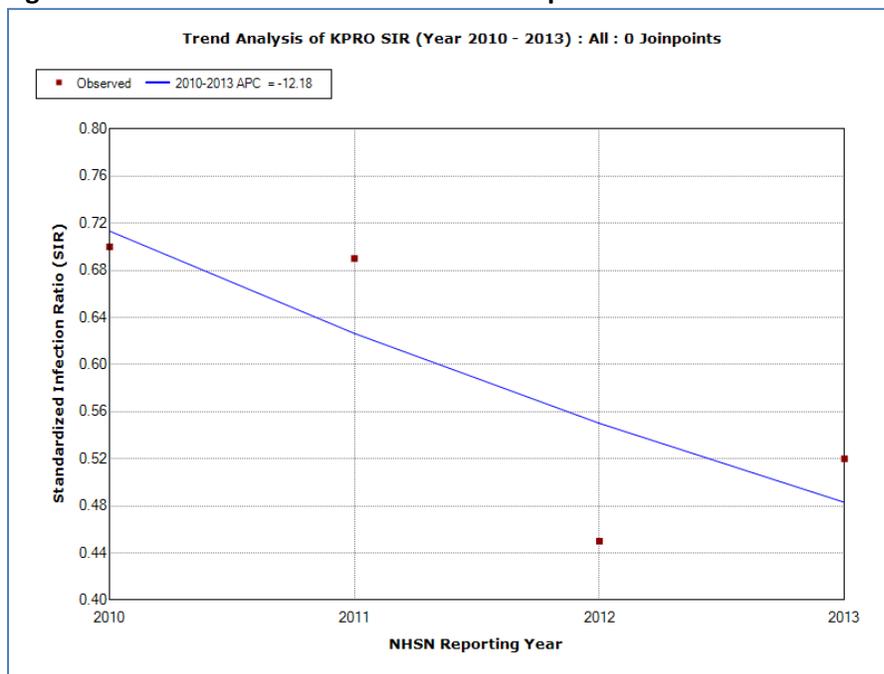
As shown in Table 5 and Figure 4, reductions in KPRO SSIs have been observed since Illinois hospitals have started reporting in 2010. The average annual percent change (AAPC) of KPRO SSI from 2010 to 2013 was approximately 12%. However, it was not found to be statistically significant (not significantly different than zero at alpha equal 0.05).

Table 5. Changes in Standardized Infections Ratios (SIRs) in Illinois KPRO SSI from 2010 – 2013

SSI Procedure Type	Year Range	Average Annual Percent Change (AAPC)	95% Confidence Interval		P-Value	Statistical Interpretation
			Lower Limit	Upper Limit		
KPRO	2010 - 2013	-12.18	-34.5	17.8	0.1980	% Change is Not Significant

The Illinois SIR values for KPRO SSIs are trended over time in Figures 4 below.

Figure 4. Trend of KPRO SSI SIR in Illinois Hospitals from 2010 – 2013



Summary

The KPRO SSI trend analysis indicates consistent decreases in the number of KPRO SSIs reported in Illinois hospitals between 2010 and 2013, as reflected in the decreased SIR. However, the overall average annual percent change in KPRO SSI SIR since 2010 is not statistically significant.

Methicillin-Resistant *Staphylococcus aureus* (MRSA) Infections Reporting in Illinois Acute Care Hospitals, 2012 - 2014

As of January 1, 2012, all Illinois hospitals began mandated reporting of blood cultures positive for MRSA using the Center for Disease Control and Prevention's National Healthcare Safety Network (NHSN) Multidrug-Resistant Organism (MDRO) Laboratory-identified (LabID) Event module. The LabID event surveillance method enables facilities to report proxy measures for health care-associated infections based on data obtained from the laboratory without clinical evaluation of the patient.

MRSA bacteremia data are summarized using the standardized infection ratio (SIR) over time. However, because only 3 years of data is available at this time, the average annual percent change (or AAPC) is reported quarterly for this summary.

Table 6 below documents the SIR for MRSA quarterly for each of the three available reporting years.

Table 6. Trend of MRSA SIRs in Illinois acute care hospitals, 2012 – 2014 (by quarter)

MRSA	2012				2013				2014			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Observed	0.90	0.90	0.83	0.74	0.67	0.74	0.74	0.68	0.77	0.60	0.72	0.75
Modeled	0.85	0.83	0.81	0.79	0.78	0.76	0.74	0.73	0.71	0.70	0.68	0.67

The Illinois SIR values for MRSA are depicted over time in Figure 5 below.

Figure 5. Trend of MRSA SIRs in Illinois acute care hospitals, 2012 – 2014 (by quarter)

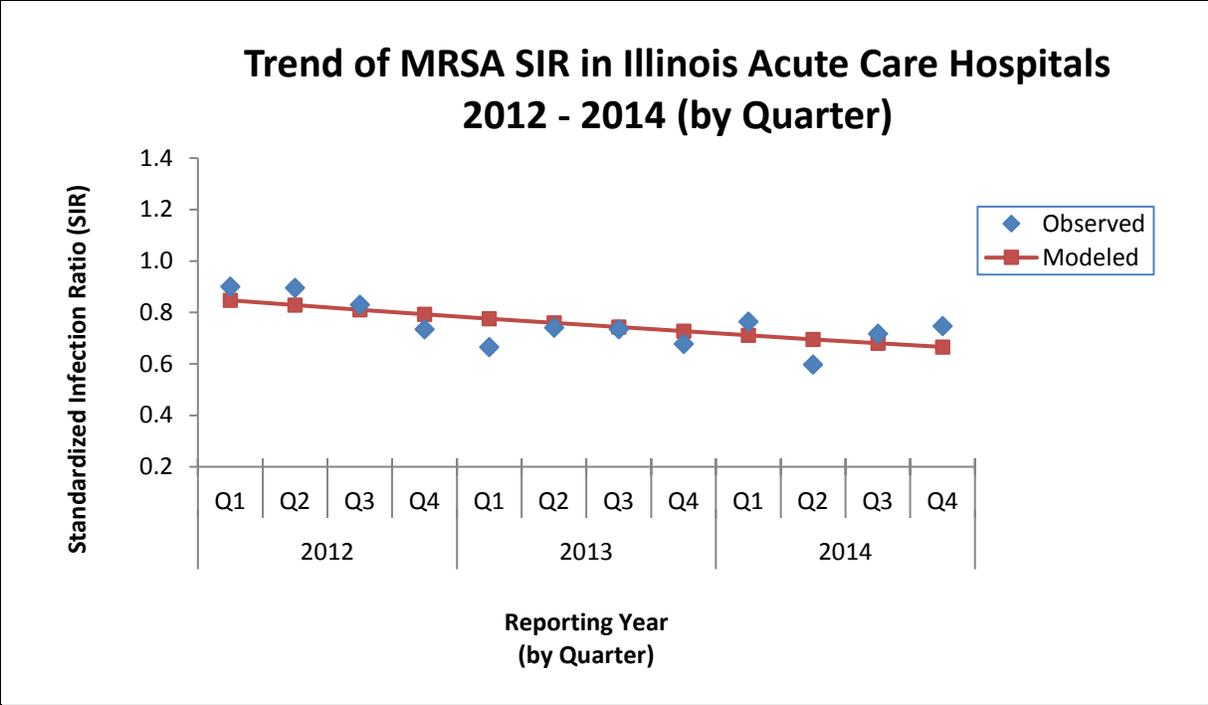


Table 7 below highlights the average annual percent change in MRSA SIRs both quarterly and by year.

Table 7. Percent Change in MRSA SIRs, 2012 - 2014

Trend Range (Reporting Year)	% change (SIR) 95% Confidence Interval	p-value (SIR)	Quarterly Percent Change* 2012 – 2014	p-value (quarterly % change)	Statistical Interpretation
2012 vs. 2013	-15.9% (0.72, 0.981)	0.0277 ^	-2.16% ^	0.01499	The average quarterly percent decrease of 2.2% is significantly different than 0 at alpha = 0.05
2013 vs. 2014	-1.5% (0.838, 1.158)	0.8556			
2012 vs. 2014	-17.2% (0.71, 0.966)	0.0164 ^			

^ Statistically significant (p< 0.05)

Summary

The Joinpoint analysis indicates that Illinois SIRs for MRSA bloodstream infections have been steadily decreasing on average of 2% per quarter for the 3-year period of 2012 through 2014 (Table 7). This quarterly decrease of MRSA SIR is statistically significant ($p < 0.05$).

***Clostridium difficile* Infections (CDI) Reporting in Illinois Acute Care Hospitals, 2012 - 2014**

As of January 1, 2012, all Illinois hospitals also began mandated reporting of blood cultures positive for *Clostridium difficile* Infections (CDI) using the Center for Disease Control and Prevention's National Healthcare Safety Network (NHSN) Multidrug-Resistant Organism (MDRO) Laboratory-identified (LabID) Event module. Similar to MRSA, the LabID event surveillance method enables facilities to report proxy measures for healthcare acquisition of infections based on data obtained from the laboratory without clinical evaluation of the patient.

Clostridium difficile Infections data are summarized using the standardized infection ratio (SIR), and trends analyzed using Joinpoint. However because only 3 years of data is available at this time, the average annual percent change (or AAPC) is reported quarterly for this summary

Table 8 below outlines the SIR for MRSA quarterly for each of the three available reporting years.

Table 8. Trend of CDI SIRs in Illinois acute care hospitals, 2012 – 2014 (by quarter)

CDI	2012				2013				2014			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Observed	0.94	0.90	0.92	0.92	0.94	0.83	0.89	0.93	1.10	0.98	0.93	0.97
Modeled	0.90	0.91	0.92	0.92	0.93	0.94	0.94	0.95	0.96	0.96	0.97	0.98

The Illinois quarterly SIR values for CDI are displayed over time in Figure 5 below.

Figure 6. Trend of CDI SIRs in Illinois acute care hospitals, 2012 – 2014 (by quarter)

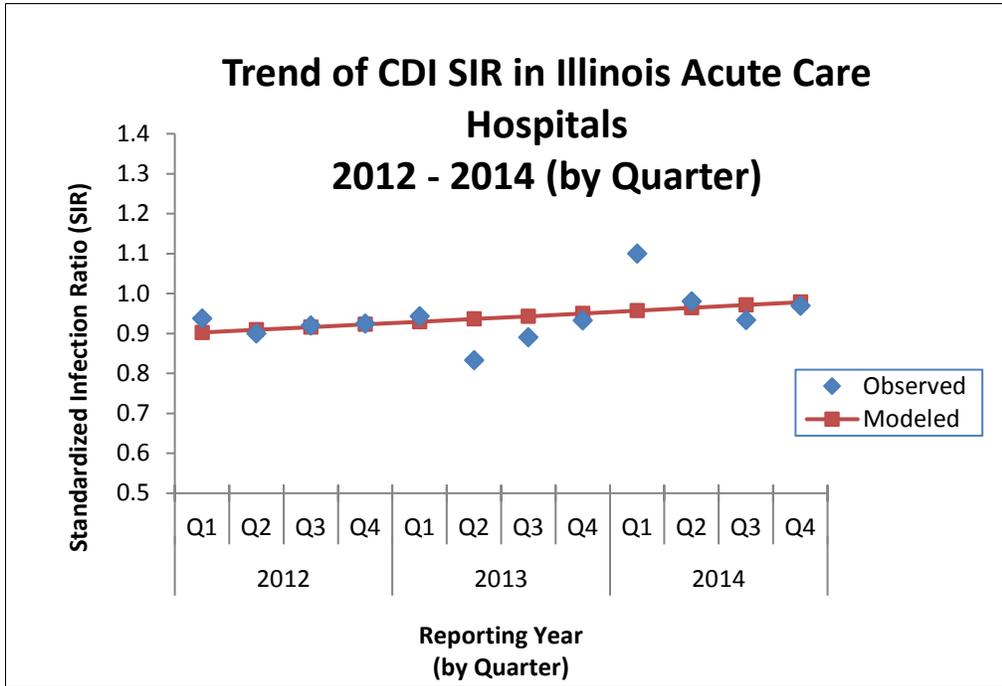


Table 9 highlights the average annual percent change in CDI SIRs both quarterly and by year.

Table 9. Percent Change in CDI SIRs, 2012 - 2014

Trend Range (Reporting Year)	% change (SIR) 95% Confidence Interval	p-value (SIR)	Quarterly Percent Change* 2012 - 2014	p-value (quarterly % change)	Statistical Interpretation
2012 vs. 2013	-2.3% (0.938, 1.019)	0.279	0.74%	0.1992	The average quarterly percent increase of 0.7% is not significantly different than 0 at alpha = 0.05
2013 vs. 2014	10.1% (1.057, 1.147)	0.000 ^			
2012 vs. 2014	7.6% (1.033, 1.121)	0.0004 ^			

^ Statistically significant (p< 0.05)

Summary

In 2014, there were 4640 CDI reported compared to 4661 predicted, for an SIR of 0.995 (CI 0.967, 1.024), which is statistically similar compared to the national referent period. When compared to previous years, there was a decrease of 2% from 2012 to 2013 and a significant increase of 10% from 2013 to 2014.

Joinpoint analysis indicates that Illinois SIRs for CDI have been steadily increasing on average of 0.74% per quarter for the 3-year period of 2012 through 2014 (Table x). However, this quarterly increase in CDI SIR is not statistically significant (p-value = 0.199).

Health Care-associated Infection Prevention Programs

The Division of Patient Safety and Quality has led an array of quality improvement activities focused on prevention of HAIs. Once accepted as an unfortunate but inevitable consequence of health care, HAI prevention is now considered a “winnable battle”. Successful and sustained HAI prevention requires close integration and collaboration between state and local health care organizations. The Illinois Department of Public Health has a central role in HAI prevention in Illinois because it is responsible for the protection of patients across health care systems and is uniquely situated to serve as a bridge between health care systems and the community. The Division has an HAI program coordinator, a statewide HAI plan and a HAI Prevention Advisory Council representing an array of partners across the state. Over the last several years, the Department has targeted quality improvement initiatives for HAI elimination that address areas that were identified as the most challenging “battles” in need of support from the state health department: *Clostridium difficile* (CDI), Carbapenem-resistant *Enterobacteriaceae* (CRE), and antibiotic (antimicrobial) stewardship. Not coincidentally, CDC has classified CDI and CRE as two of the top three antibiotic resistant infection threats in the United States (4). The Division’s HAI Prevention program has played an instrumental leadership role in driving the state’s agenda to prevent multi-drug resistant organisms and promote antimicrobial stewardship – from prevention collaboratives and statewide education campaigns, to state and regional seminars and summits with health care facilities.

CDI Prevention and Reduction

The HAI Program’s work in CDI prevention began with two small hospital prevention collaboratives in 2009 and 2010 that resulted in a 15% and 26% reduction in CDI respectively. Prevention collaboratives engage health care facilities to work together to implement improvements in the delivery of care to patients in specifically identified areas.. Building on the success of these collaboratives, a statewide CDI prevention campaign was implemented in 2012 to disseminate evidence based best practices for CDI prevention and facilitate an increase in health care facility engagement in CDI prevention activities. The campaign widened to include both acute care hospitals and long term care facilities.

Since CDI can spread across health care agencies that transfer or share patients, in March of 2013 a collaborative was initiated with 4 hospitals and 11 skilled nursing facilities to prevent CDI across the continuum of care. This project brought together hospitals and skilled nursing facilities in regional

teams for the first time. It highlighted the need for infection prevention and quality improvement infrastructure at skilled nursing facilities and displayed the gaps and difficulties in communicating CDI prevention across health care settings. Based on this work, more focused efforts on preventing CDI across transitions of care began in 2015. The Division of Patient Safety and Quality partnered with the Chicago Department of Public Health to create a small collaborative of acute care hospitals (ACH), long term acute care hospitals (LTACHS) and skilled nursing facilities (SNFs). Acute care hospitals were recruited in February 2015 and asked to identify long term acute care hospitals and skilled nursing facilities that they most frequently received patients from or transferred patients to. The goal of the collaborative was to improve communication about CDI infection during transitions of care.

Three acute care hospitals, three long term acute care hospitals and four skilled nursing facilities agreed to participate. Learning visits began at each site in April and continued through June. Facility assessments covering the domains of: infection prevention and control infrastructure/capacity; communication during transitions of care; antibiotic stewardship; early detection, isolation and appropriate testing for CDI; contact precautions practices and hand hygiene; environmental cleaning; and laboratory practices were completed during the learning visits. Results were shared during the June kick off meeting. Three regional clusters were formed with the acute care hospital as the hub. Cluster meetings were held for multidisciplinary discussions about the transition of care and gaps in communication related to CDI and antimicrobial use. Action plans were created to improve communication and bridge the gaps.

As part of the collaborative, the skilled nursing facilities agreed to enroll in NHSN for CDI surveillance. As of the end of this fiscal year, one skilled nursing facility successfully completed the enrollment process and has been reporting CDI data. The remaining skilled nursing facilities continue the enrollment process.

CDI data from all participating facilities will allow a better assessment of the reduction in CDI across all collaborative participants. This collaborative is scheduled for completion in February 2016.

Antimicrobial Stewardship

It is estimated that 25% - 50% of systemic antimicrobials, or antibiotics, are prescribed in hospitals inappropriately (5). These estimates range even higher at long term care facilities. Antibiotic misuse propels antibiotic resistance and increases health care-associated infections. The Centers for Disease Control and Prevention estimates that drug-resistant bacteria cause two million illnesses and account for some 23,000 deaths per year.(6) In March of 2015, the White House released a “National Action Plan for Combating Antibiotic-resistant Bacteria” to guide the nation in efforts to prevent the spread of drug-resistant (antibiotic-resistant) bacteria. In response, the Division of Patient Safety and Quality (the Division) launched several initiatives in Illinois around antimicrobial (antibiotic) stewardship during this past year to promote best practices.

In spring of 2015, the Division launched the statewide Precious Drugs & Scary Bugs Campaign to promote appropriate antibiotic prescribing in outpatient settings. The campaign currently targets outpatient healthcare providers and participation involves completing a pre-/post-survey and displaying a poster-sized letter personalized with providers’ names and photographs that states providers’

commitment to appropriate antibiotic prescribing. Facilities may also choose to participate in educational seminars and track antibiotic prescribing. A particular focus of the campaign is on management of upper respiratory tract infections, which account for three quarters of antibiotic prescribing by office based physicians. The Division established a workgroup with representation from medical groups, professional societies, payers, and academia to help guide campaign planning and implementation. The campaign was based on the success of a randomized control trial that showed that provider public commitment posters served as a low-cost behavioral “nudge” and was effective in decreasing inappropriate antibiotic prescribing for acute respiratory tract infections by 19.7% (7) In early 2015, 38 outpatient practices representing 239 providers signed up to participate in the campaign. A baseline survey was administered to assess provider attitudes and practices around antibiotic prescribing. The Division customized and printed over 500 commitment posters which were displayed in examination rooms and other locations at participating facilities. This current project will be expanded over next year.

In addition to the Precious Drugs & Scary Bugs Campaign, antibiotic stewardship practices of 174 acute care hospitals were assessed based on the NHSN surveillance system’s Annual Hospital Survey responses. Data analysis of survey responses is currently underway. Based on results, hospitals with few stewardship activities in place will be identified. In collaboration with the Chicago CDC Prevention Epicenter, technical assistance to support stewardship programs will be provided to hospitals in need.

An array of educational activities were undertaken to promote best practices for antibiotic prescribing. The Department partnered with Northwestern Memorial Hospital and Telligen, the state’s Quality Improvement Organization, to host the second statewide “Summit on Antimicrobial Stewardship” in Chicago in March, 2015. The Summit was attended by over 230 healthcare professionals from acute, long term, and outpatient care settings and facilitated best practice sharing and action planning around initiating or enhancing antibiotic stewardship programs.

During Get Smart Week in November 2014, the Division partnered with Telligen to host 3 webinars on flu prevention, community-acquired CDI infection, and antibiotic stewardship. Phone lines used totaled 162, and attendees included hospitals, nursing homes, outpatient facilities, and health departments. At the same time, Blue Cross Blue Shield hosted a light show on their downtown Chicago office building with messaging about safe antibiotic use to promote public awareness in partnership with the Division. The Division also delivered presentations on appropriate antibiotic use at several statewide stakeholder meetings, including the Illinois Medical Director's Association annual meeting, LeadingAge Illinois’ “Senior Living Conference”, and the Immunization and Communicable Disease Conference. A one day educational seminar attended by 33 healthcare professionals from 11 acute care hospitals and outpatient facilities was held as part of an intensive quality improvement collaborative (ICHASE). The seminar addressed antibiotic therapy for particular disease states and engaged attendees in identifying facility-specific goals related to antibiotic stewardship.

CRE Prevention

Carbapenam – resistant *enterbacteriaceae*, or CRE, is a recently emerging infectious disease threat. CRE are a family of bacteria that are difficult to treat because they are highly resistant to antibiotics. CRE infections occur in people who are sick or have been exposed to treatment in acute and long term health care settings. Because of the high resistance to antibiotics, CRE can be very difficult to treat and risk of death is higher than many other infections.

Central to the Division’s CRE prevention efforts was the development of a novel public health tool called the Extensively Drug Resistant Organism (XDRO) registry which launched on November 1, 2013. The XDRO registry is an infection control tool with a twofold purpose:

1. **Improve CRE surveillance:** The registry stores CRE surveillance data and has features that can help facilities track their CRE submission history.
2. **Improve inter-facility communication:** The registry provides efficient CRE information exchange across the spectrum of care.

Acute and long-term care facilities and laboratories began reporting CRE to the XDRO registry as required by the Illinois Communicable Disease Act (77 Ill. Adm. Code 690). Through 7/13/15, 160 facilities had submitted 2,844 reports to the XDRO registry; 134 facilities had queried the registry 3,013 times, and 105 facilities had viewed the XDRO dashboard that gives an overview of their facility and statewide data. Weekly surveillance on XDRO reports and follow up on any clusters or cases with rare resistance mechanisms is conducted.

Clinical laboratories may have limited testing capacity to correctly identify CRE. To ensure that CRE isolates identified in Illinois and entered in the XDRO registry meet the Illinois CRE surveillance definition, the Illinois Department of Public Health has engaged in a laboratory validation program with Rush University to confirm and further characterize a sample of reported CRE isolates. From December 2014 – July 2015, 56 laboratories submitted 194 isolates for validation testing. A second round of lab validation will start January 2016 and will continue through July 2016.

There have also been continuing efforts to improve the infrastructure of the Registry to support facility submission and tracking of data. A pilot of an automatic alert functionality was implemented at one health system. The XDRO registry’s automatic alert system supports rapid inter-facility communication of CRE. If a CRE positive patient in the registry is admitted to a facility, the system sends an e-mail alert to their infection prevention staff, enabling them to take appropriate infection control actions. As of 7/13/15, this system received 13 alerts for 9 unique, admitted patients. One alert was a false match. Feedback from hospital Infection Preventionists thus far has been positive. A feedback survey is being designed that will collect information from Infection Preventionists about the benefits of the automatic alerting functionality in the future. The automatic alert system pilot is scheduled to include four additional facilities in the next few months.

A statewide task force of subject matter experts was convened and has met regularly over the past year to guide CRE prevention activities. Over 30 representatives from facilities across the care continuum, laboratories, state and local health departments, hospital and long-term care associations, and the state quality improvement organization comprise the CRE Task Force. The Task Force developed guidelines

for CRE laboratory testing procedures, provided outbreak response and prevention guidance to health care organizations, and adapted the CDC CRE prevention toolkit recommendations for long-term care settings. A CRE surveillance and response plan for long term care is being finalized for statewide dissemination. The task force has also given guidance and helped with planning educational outreach to health care professionals across the state.

During this past year education efforts continued to build capacity for CRE prevention and investigation at healthcare facilities, health departments, and laboratories through training workshops. The Northern Illinois Infection Prevention and CRE Workshop was held on 5/12/15 in Addison, IL, with an attendance of 187. The workshop was held in collaboration with three local health departments (DuPage County, Cook County, and City of Chicago). The training featured presentations on CRE initiatives and epidemiology in Illinois, antimicrobial resistance, and advanced testing methods for clinical microbiology laboratories. A session on CRE case studies and regional prevention planning was designed to build regional approaches to CRE prevention.

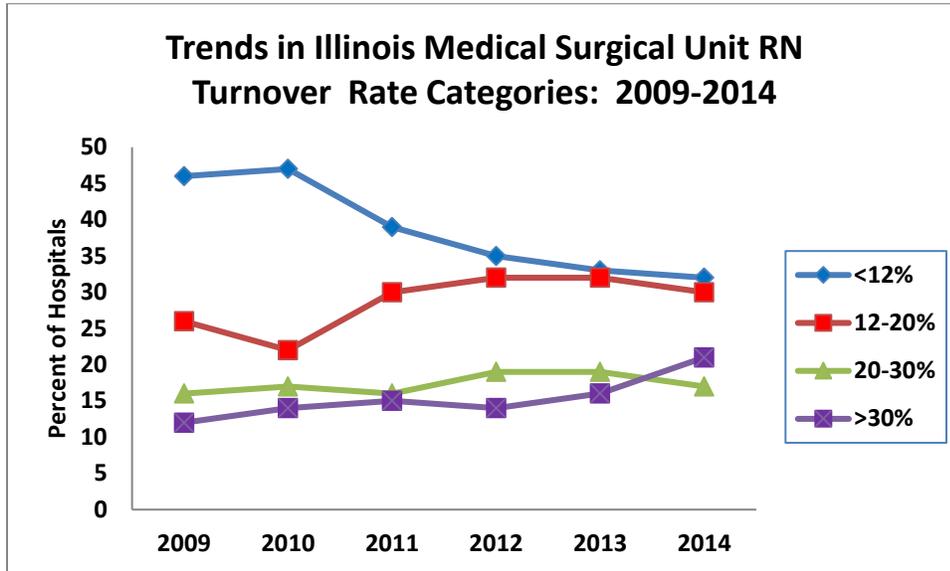
Two additional CRE prevention regional workshops were subsequently held in Central and Southern Illinois on 7/28/15 and 7/23/15, respectively. These workshops were held in collaboration with the Downstate Illinois Partnership Against Antibiotic Resistance, Southern Illinois University School of Medicine, Association of Professionals in Infection Control – Southern and Central Chapters, and Telligen. These workshops were attended by an additional 221 healthcare professionals.

Nurse Turnover

Nurses provide around the clock, direct care for patients in hospitals. As such, they play a key role in ensuring the safety and quality of care for patients. Researchers have linked several measures of nurse staffing to improved patient outcomes and patient safety (8).

Nursing turnover reflects the rate at which nurses leave a hospital staff position. High turnover can represent nurse job dissatisfaction. A high turnover rate may impact a hospital's productivity, delivery, and quality of care if skilled and experienced nursing staff is lost. The information below is based on data submitted from acute care hospitals to the Illinois Department of Public Health. National benchmarks for nursing turnover are not publicly available. However, a number of investigators consider a turnover rate of less than 12% among hospital staff as most optimal (9). Hospitals with official "Magnet Designation" reported overall R.N. turnover rates of 10.72% in February 2014 (10). Magnet recognition is a formal designation of the American Nurses Credentialing Center, a subsidiary of the American Nurses Association, which recognizes health care organizations that demonstrate excellence in nursing practice and quality patient care as a driving force. In Illinois, of 179 acute care hospitals 68% reported a turnover rate higher than is considered optimal in medical/surgical units for the year 2014. Trend data on R.N. turnover is presented below in Figure 7 from 2009 through 2014. Hospitals included in this analysis included all rural, urban, large and small acute care facilities. Note that the percent of hospitals falling into the optimal turnover rate category of <12% decreased between 2010 and 2014. Continued monitoring of these trends is indicated.

Fig. 7 Trends in Medical/Surgical RN Turnover Rate Categories in Illinois Acute Care Hospitals: 2009-2014

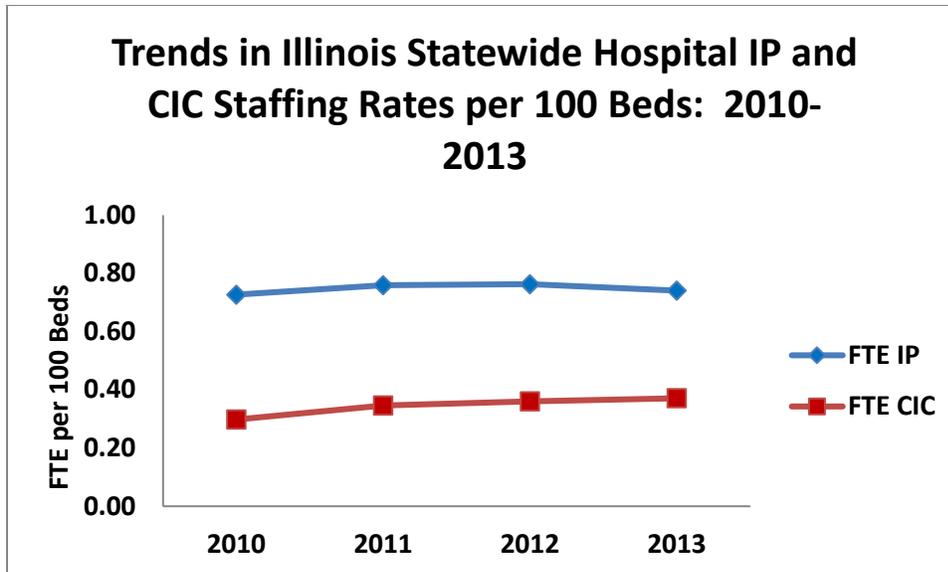


Infection Prevention Staffing

Infection prevention professionals play a key role in reducing acquisition and transmission of infections during a hospital stay. They develop and implement infection control procedures, identify infections and perform investigations, provide staff education, as well as ongoing surveillance and monitoring of infections. A study published in 2002 called the Delphi Project, suggested 0.8-1.0 full time equivalent infection prevention staff per 100 occupied acute care beds was indicated for adequate hospital staffing (11). The Infection Preventionist's role has expanded significantly since this measure was developed, given increased external surveillance and reporting mandates coupled with a more complex patient population and healthcare system. Studies are currently underway to develop more timely and appropriate staffing recommendations based on this role expansion.

The Department of Public Health collects annual survey data from hospitals on full time equivalent infection prevention staff, including those professionals with special certification in infection prevention. Trends in statewide staffing rate for infection preventionists (IPs) and certified infection preventionists (CIC) are highlighted in Figure 8. Between 2010 and 2013 statewide staffing rates for IPs ranged from 0.73-0.76 per 100 beds, while CIC ranged from 0.30 -0.37 per 100 beds. This analysis includes all Illinois acute care hospitals - rural, urban, large and small acute care facilities.

Figure 8 Trends in Illinois Hospital IP and CIC Staffing Rates per 100 Hospital Beds: 2010-2013



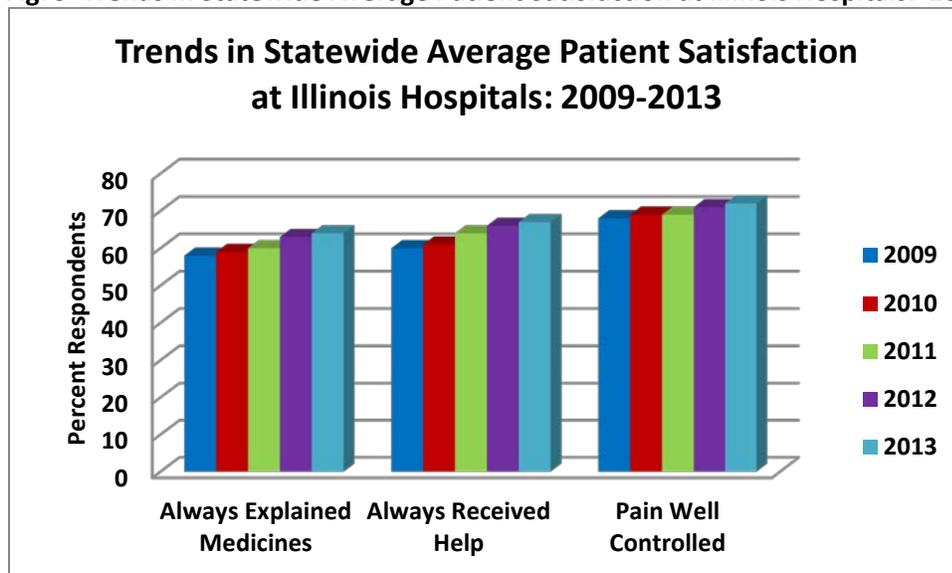
Person and Family-Centered Care – Ensuring that each person and family are engaged as partners in their care

Timely access to health care that is sensitive to the needs and preferences of patients and their families is one of the six priority aims of the National Quality Strategy. Understanding what is needed to optimize an individual’s health, what relevant treatment options are available, and being able to make choices that fit an individual’s lifestyle are essential for staying healthier. High quality health care entails getting clear information about care plan options and having positive experiences with the health care delivery system. Patient-centered care is a dimension of health care quality that highlights the importance of patients being at the center of health care delivery, with emphasis on listening to patients’ perspectives and choices, providing information and support for health care self-management and decision making, collaborating and using a shared decision-making process, and enabling patients to navigate and manage their care effectively. Patient experience of care should be evaluated related to quality and safety to help guide improvements in this arena. Data on patient satisfaction with recent hospitalization is presented and updated regularly on the Illinois Hospital Report Card.

The Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) is a national, standardized survey of hospital patients. The survey asks a random sample of recently discharged patients about important aspects of their hospital experience. The data are collected by the Centers for Medicare and Medicaid Services. Highlighted below in Figure 9 are trends in Illinois statewide average patient satisfaction for three survey questions: 1) staff always explained medications; 2) Patients always received help as soon as wanted; and 3) pain was always well controlled. Note that although improvements are indicated, some progress in improving success with these measures has been made in recent years. Health care facilities are being challenged to redesign care in ways that are authentically

patient-centered. Annual results of the HCAHPS survey is one avenue to evaluate improvement in this arena over time, and will continue to be monitored on the HRCCGHC web site.

Fig. 9 Trends in Statewide Average Patient Satisfaction at Illinois Hospitals: 2009-2013



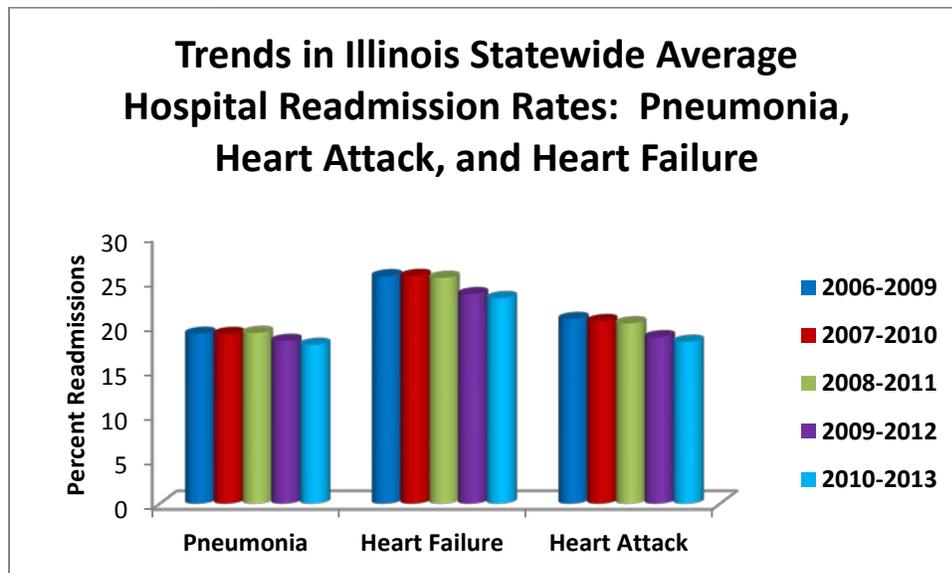
Coordination of Care – Promoting effective communication and coordination of care

A 2009 study in the New England Journal of Medicine found that nearly one in five Medicare recipients discharged from the hospital is readmitted within thirty days (12). This translates into approximately 2.4 million patients. It has been estimated that three quarters of these readmissions could have been prevented, and that the cost to Medicare was \$17.4 billion dollars. Readmissions are associated with a variety of factors including poor coordination of care from the inpatient to outpatient settings, poor communication and medication errors. Promoting effective communication and coordination of care can improve the quality and safety of health care by decreasing preventable health complications and unnecessary hospitalizations, duplication of diagnostic tests and fewer conflicting prescriptions. Driven by the Affordable Care Act, the National Quality Strategy and a host of other national initiatives, efforts have been underway to reduce hospital readmission rates and improve coordination of health care.

Rates of hospital readmission can give information about whether a hospital is doing its best to prevent health complications, educate patients at discharge, and ensure patients make a smooth transition to their home or another setting such as a nursing home. The HRCCGHC website presents data from the Centers for Medicare and Medicaid on hospital readmissions for three major conditions: pneumonia, heart failure, and heart attack. The graph below shows trends in Illinois statewide average hospital readmission rates for these three conditions. These measures are published in three year combined reporting periods over time with a July 1-June 30th reporting cycle. The data below highlights five

reporting periods. Note below in Figure 10 that rates are trending downward as part of initial efforts to reduce readmission rates by 20 per cent.

Fig. 10 Trends in Illinois Statewide Average Hospital Readmission Rates: Pneumonia, Heart Attack, and Heart Failure



Clinical Care – Promoting Effective Prevention and Treatment

Chronic diseases are the leading cause of death in this country. Over 130 million Americans have at least one chronic illness (13). Many Americans have several. Preventing and treating the leading causes of mortality and illness is a major aim of the National Quality Strategy. This includes cardiovascular disease, cancer, diabetes, HIV/AIDS, premature births and behavioral health conditions. Below are data from the Illinois HRCCGH as well as highlights of special projects related to effective prevention and treatment of several of these health conditions.

Maternal Child Health

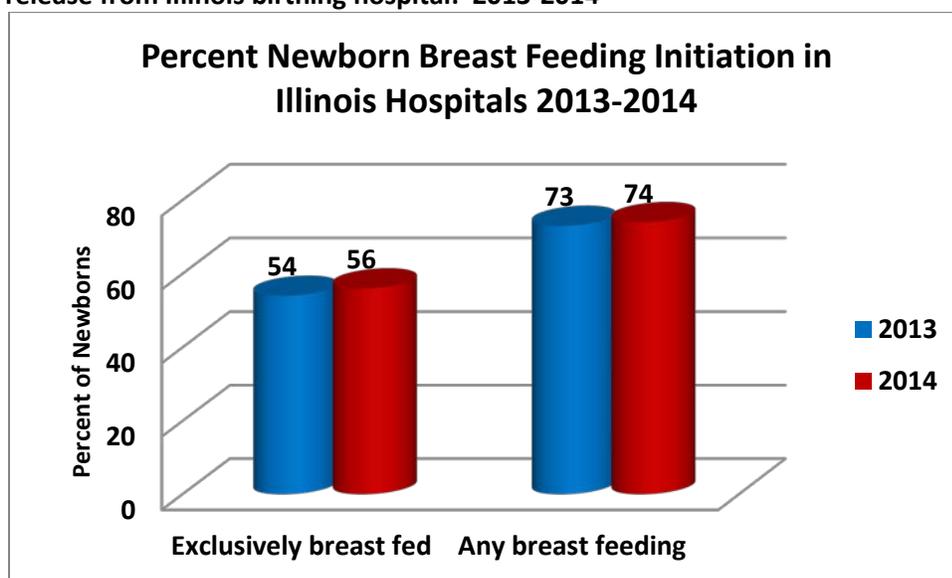
Breast Feeding

Breast feeding has been shown to provide important benefits for both mother and baby. Breast milk contains antibodies that protect infants from bacterial and viral infections, and breast fed infants are at lower risk of certain chronic diseases including diabetes, obesity and asthma (14). Research indicates that women who breast feed may also have lower risk of some health problems, including certain breast and ovarian cancers, Type 2 Diabetes, and postpartum depression (15). In 2013, the Illinois Department of Public Health Vital Statistics began collecting more precise measures of breast feeding that include a measure for exclusive breast feeding. Breast feeding exclusively, without reliance on formula milk provides the most protective benefits for mother and child. Healthy People 2020 recommends the following target breastfeeding goals for 2020 (16):

Healthy People 2020 Breast Feeding Category	Target Goal
Ever breast fed	81.9%
Exclusive breastfed through 3 months	46.2%
Exclusive breastfed through 6 months	25.5%

Overall it has been shown that the longer a woman breastfeeds, the greater the protective benefit. Illinois now has two calendar years of more precise measures of hospital initiated breast feeding, too few for effective trending. However, the data is highlighted in the graph below. (Figure 11) For calendar years 2013 and 2014 the percent of newborns exclusively breast fed prior to release from Illinois hospitals increased slightly from 54% in 2013 to 56 % in 2014. The percentage of newborns that received “any” breast feeding prior to hospital release, including those who were exclusively breastfed, were fairly similar for both years. Nationally, according to the CDC, breast feeding rates have been rising. These data will be important to examine over the next several years.

Figure 11. The percentage of newborns that received “exclusive” and/or “any breast feeding” prior to release from Illinois birthing hospital: 2013-2014



The CDC’s Breastfeeding Report Card 2014, which includes data from their national survey shows similar results for “any” breast feeding for Illinois at 77.4%. However, the CDC data for Illinois for exclusive breastfeeding at three months after delivery was 38.1% (34.6% in 2013) and at six months was 18.2% (11.1 % in 2013) demonstrating room for continued improvement (17).

Success with breast feeding can be supported in a variety of ways and settings. One way is for health care institutions to adopt policies that foster effective breast feeding. The World Health Organization, the Centers for Disease Control and Prevention, Healthy People 2020 and the U.S. Surgeon General have all released initiatives to increase the percentage of “baby friendly” hospitals (www.babyfriendlyusa.org). “Baby Friendly” hospitals create an array of environmental supports for

breast feeding to occur. The Healthy People 2020 goal is to increase “baby friendly” designated hospitals from less than 5% to 8.1 % (18). Five Illinois hospitals currently have the WHO baby friendly designation as of June 2015, approximately 4% of Illinois birthing hospitals.

Lactation Consultant Staffing

Professional lactation support can make a big difference in success rates for breast feeding among women who want to breast feed. A lactation consultant has specialized skills in clinical management of breast feeding. Lactation consultants can help support initiation of breast feeding amongst newborns in the hospital setting, as well as provide support during prenatal care and in the community for continued breast feeding over time. The CDC’s Breast Feeding Report Card tracks availability of certified lactation consultants (CLCs) and International Board Certified Lactation Consultants (IBCLC) nationally. The IBCLC designation is considered the highest level of certified lactation consultant. From 2006 through 2013, the number of IBCLCs increased from 2.1 to 3.5 per 1,000 live births. Data on CLC availability is more limited, but shows that in 2013, there were 3.8 CLCs per 1,000 live births, compared to only 2.5 in 2011 (19). (61CDC Breast Feed Report Card 2014)

Data on Illinois lactation consultant staffing was first published on the Hospital Report Card in the fall of 2014. Data was gathered from Illinois birthing hospitals (those hospitals that deliver babies) via the Illinois Health Care Facilities and Services Review Board’s “Annual Hospital Profile Survey”.

Approximately 17% of birthing hospitals did not have CLC staffing and 37% had no IBCLC. The statewide average staffing rate was 1.47 CLC and 0.81 IBCLC per 1000 live births for reporting year 2013. Many birthing hospitals have initiatives underway to become Baby Friendly hospitals, which includes several years of preparation and access to lactation consultant staffing. Further data on state progress will become available over time.

Cardiovascular Disease Reduction

Despite significant decline in recent years, cardiovascular disease is still the leading cause of mortality in this country. It accounts for one of every three deaths in the country and over \$503 billion in expenditures annually (20). In Illinois, cardiovascular disease mirrors the national picture. It is the leading cause of death in the State and responsible for one third of all deaths. The mortality rate in 2009 for Illinois was 453 per 100,000 population versus 451.8 for the nation. Despite these statistics, cardiovascular disease is preventable. Cardiovascular disease prevention and treatment is a major focus of the National Quality Strategy.

An array of risk factors can increase the likelihood of developing cardiovascular disease, including hypertension, high cholesterol, smoking, obesity, physical inactivity, poor nutrition, and diabetes. Many of these risk factors can be effectively controlled to decrease cardiovascular risk. If people with hypertension were effectively treated to reach the targeted goal (<140/90mmHg) for example, an estimated 46,000 deaths would be prevented annually. Effective risk factor control requires interventions that address both clinical care and the broader social/environmental determinants of health and promotion of healthy behaviors.

The Million Hearts Initiative is a public-private partnership led by the Centers for Disease Control and Prevention with 65 partners. The goal is to prevent 1 million heart attacks and strokes over the next five years. The focus includes targeting use of aspirin, blood pressure and cholesterol control, clinical decision support and smoking cessation to achieve this goal. The Division of Patient Safety and Quality was awarded continuation funding by the Association of State and Territorial Healthcare Organizations to expand a Million Hearts Learning collaborative focused on hypertension control in 2014/2015. The collaborative initially focused on two Illinois counties and fostered partnerships with local health departments, federally qualified health clinics, community agencies, and local provider groups. Local partnerships worked together to identify populations with high hypertension rates, resources available to address hypertension and then to activate system level change to improve hypertension control. Three major strategies of the project included 1) data driven quality improvements including the use of quality dashboards at clinics; 2) development of public health and clinical linkages; and 3) implementation of self-management tools. For the project continuation award, four local health departments and their associated Federally Qualified Health Clinics were recruited to participate in the Healthy Hearts expansion project. The four new local health departments involved included Mason, Whiteside, Lee and Will counties. Based on the Department's zip code analysis and "hot spotting" of preventable hypertension admissions and ED visits, initiatives were planned and initiated. Final results will become available in fiscal year 2016. In addition, in May 2015 the Division partnered with a consortium of organizations led by Northwestern University, and was recently awarded three year funding from the Agency for Health Research and Quality to help address cardiovascular disease prevention quality improvement amongst small primary care practice providers across a geographic footprint of Illinois, Wisconsin and Indiana.

Population and Community Health – Working with communities to promote widespread use of best practices to enable healthy living.

This fifth aim of the National Quality Strategy focuses on promoting access to effective preventive and primary health care, as well as factors beyond the health care delivery system that focus on the social determinants of health. Social determinants of health include the physical and social environment of communities, healthy behaviors such as nutritious foods and physical activity, and equity in opportunity for healthy living.

The Illinois Public Health Community Map feature of the HRCCGHC web site (<http://www.healthcarereportcard.illinois.gov/map>) makes information about the quality of health in communities available to the public, and highlights socioeconomic and racial/ethnic disparities that may exist. Data are presented and displayed geographically by Illinois region, county, and by sub-region and zip code for Cook County and Chicago. A major focus of the website is on access to health care. An array of measures are presented that can serve as a screening tool for identifying problems involving access to primary care and other quality issues. These data are a unique view of Illinois health care issues at the community level. In January 2015 the majority of current measures on the Map were updated to reflect combined calendar reporting years 2011 through 2013. In June 2015, a new module on Pneumonia Readmissions was added to the site. This first glimpse at the geographic distribution of

hospital readmissions for pneumonia will be expanded over time. Initial data indicate that overall pneumonia readmissions occurred more frequently among those 65 years and older. The top five counties with the highest rates among of readmissions for all age groups had higher percentages of residents with median age greater than 65 compared to the state benchmark (i.e. 18.3 – 20.3% versus 13.9% for the state average). The Map provides data on overall emergency room use as well as use associated with diabetes and asthma, preventable hospitalizations, and geographic variation for these measures across the state. Highlighted below are trend data from the Map focused on access to health care.

Patterns and Trends in Access to Care and Health Equity

Emergency department (ED) visit volume has surged in recent years, and many people are using these services as a primary means of obtaining medical care. When access to health care is compromised inappropriate emergency department use is more likely to occur – an expensive alternative. Healthy People 2020 describes four essential components for understanding the issue of access to care: 1) adequate health insurance coverage; 2) having a usual and ongoing source of care with a primary care provider; 3) timely provision of health care when needed; and 4) having an adequate workforce of primary care physicians. Ensuring access to high quality health care, reducing inappropriate care and decreasing costs are key aims of the national quality agenda.

Illinois emergency department discharge data were examined using an algorithm developed by New York University Center for Health and Public Service Research that categorizes emergency department visits according to primary care sensitive versus emergent visits (21). The algorithm also categorizes visits by behavioral health and injury visits. Discharge data for calendar years 2009 through 2013 were examined to provide information about the magnitude and trends associated with primary care sensitive and behavioral health ED visits, and inequities that exist. Primary care sensitive visits include visits that are non-urgent or could have been treated or prevented by primary care. Behavioral health visits include visits for mental health, alcohol or substance abuse. JoinPoint regression analysis was used to analyze trends in ED visits across calendar years 2009-2013. The Average Annual Percent Change, or AAPC, was reported and reflects the magnitude of the trend during 2009-2013. Poisson regression was used to compare rates of ED visits by race/ethnicity.

Table 10 below shows the total annual ED visit volume, visit rate, and average annual percent change by race/ethnicity during the period of study. Total ED visits volume ranged between 3.96 and 4.11 million annually between 2009 and 2013. Note that the Average Annual Percent Change (AAPC) was statistically significant among African Americans representing increased visit rates, but not amongst Whites or Hispanics.

Table 10. Total ED Visit Volume, Rates and Average Annual Percent Change by Race/Ethnicity, 2009 - 2013

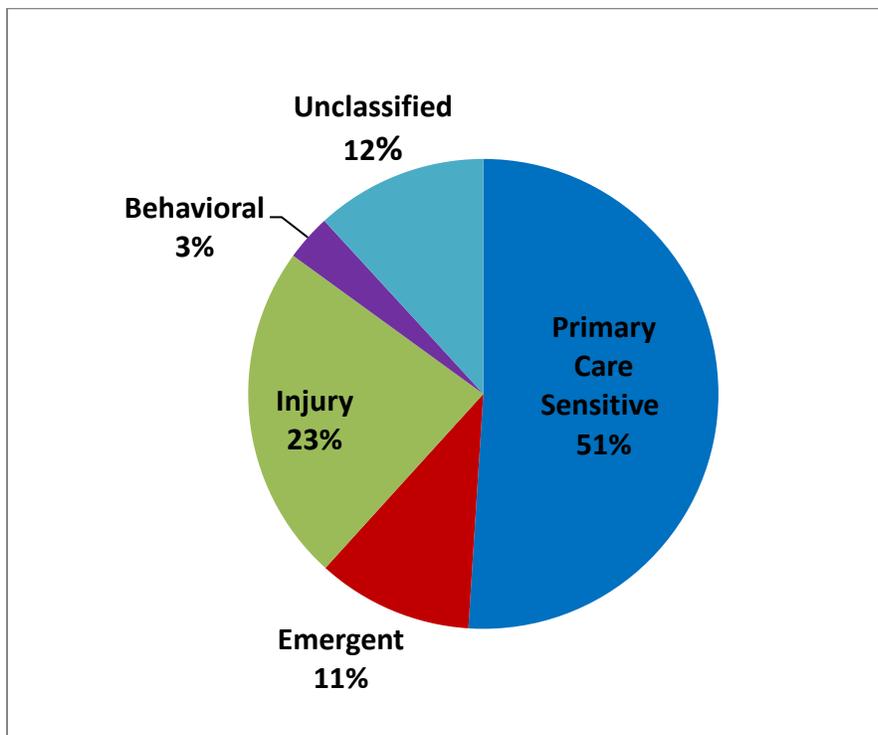
	All Races	White	African American	Hispanic
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Year	Visits	Rate	Visits	Rate	Visits	Rate	Visits	Rate
2009	3,963,659	307	2,102,855	253	1,071,981	578	531,109	270
2010	3,972,118	309	2,137,860	262	1,067,374	580	522,453	256
2011	4,156,440	323	2,186,692	269	1,116,192	606	593,940	286
2012	4,296,260	334	2,252,294	278	1,164,842	638	572,529	273
2013	4,110,534	319	2,114,762	262	1,124,718	622	581,875	275
AAPC	1.56%		1.36%		2.46%*		0.96%	

*Statistically Significant

The distribution of primary care sensitive visits has remained stable for the past five years. Figure 12 below depicts, 51 percent of visits were categorized as Primary care sensitive across all study years combined.

Figure 12. Percent Distribution of Illinois Emergency Department Visits by NYU Algorithm: 2009-2013



Trends in Primary Care Sensitive and Behavioral Health Visits

To examine the overall impact of all primary care sensitive and behavioral health-related ED utilization, rates for these two major visit categories were calculated. Table 11 below highlights rates for 2009 through 2013 for each of the two categories. Using Joinpoint analysis the average annual percent change in visit rates was calculated for each visit category. The average annual percent change in

Primary Care Sensitive visits rose 1.25 percent. In contrast, the average annual percent change in Behavioral health visits rose 7.10 percent and was statistically significant ($p < .05$). Although visit volume is small for Behavioral Health, the volume of visits increased from 108,329 in 2009 to 140,374 in 2013 (30%) with consistent increases occurring each successive year.

Table 11. Illinois Emergency Department Visit Rates for Total, Primary Care Sensitive, and Behavioral Health with Average Annual Percent Change (AAPC), 2009-2013.

	2009	2010	2011	2012	2013	Average Annual Percent Change (AAPC)
PCS	159.26	155.94	164.87	169.89	162.27	1.25
Behavioral	8.39	9.26	10.1	11	10.9	7.10*

*statistically significant ($p < 0.05$)

Analysis of Primary Care Sensitive and Behavioral Health Visits by Race/Ethnicity

Visit rates for the two major ED visit categories were studied by race/ethnicity across time and the average annual percent change calculated using JoinPoint regression analysis. In addition, the rates of ED utilization were compared between African Americans and white ED users. Results for each of the two major visit categories are presented in this section.

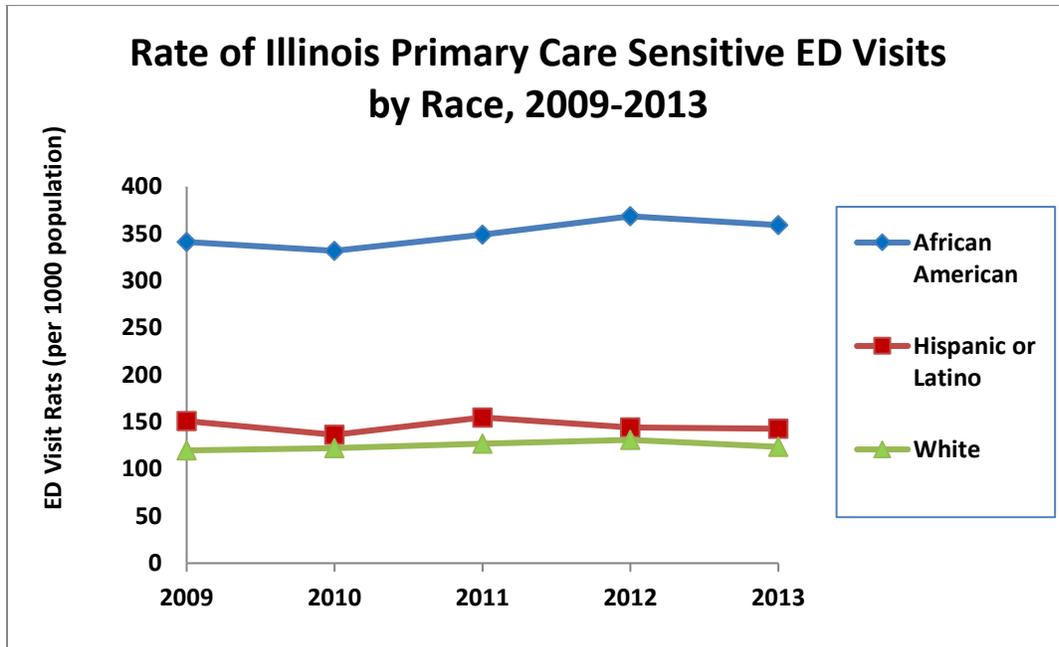
Primary Care Sensitive ED visits rates for African Americans, Hispanics and white people are highlighted in Table 12 below. Note that the average annual percent change of ED Primary Care Sensitive visits increased by 2.09% per year for African Americans, and 1.33% per year for the white population during the 5 year period of 2009 - 2013. The rate of ED visits decreased by 0.59% per year for Hispanics. None of the rate increases/decreases are statistically significant for any race/ethnic group. However, using Poisson regression analysis African Americans had notably higher Primary Care sensitive visit rates compared to white people (RR =2.81) on average between 2009-2013. This was statistically significant ($p < .0001$).

Table 12. Total Illinois PCS Emergency Department Visit Rates by Race/Ethnicity with Average Annual Percent Change (AAPC), 2009-2013.

Race/ethnicity	2009	2010	2011	2012	2013	Average Annual Percent Change (AAPC)
African American	341.03	331.66	349.02	368.35	358.92	2.09
Hispanic	151.01	136.33	154.77	144.28	142.89	-0.59
White	119.74	122.05	126.76	130.93	123.38	1.33

Figure 13 illustrates the trends in Illinois Primary Care Sensitive ED visits rates by race/ethnicity.

Figure 13. Trends in Total Primary Care Sensitive Illinois Emergency Department Visit Rates by Race/Ethnicity Rates, 2009-2013



Behavioral health-related ED visit rates for African Americans, Hispanics and white people are highlighted in Table 13 below. Note that the average annual percent change of ED visit rates increased 8.13% per year for African Americans, 9.49% per year for Hispanics and 5.99% per year for the white population during the five year period of 2009-2013. The rate increases are statistically significant ($p < .05$) for all three groups. Using Poisson regression analysis, on average African Americans had higher rates of behavioral health-related ED visits ($RR=1.67$) compared to white Americans during the study period. This was statistically significant ($p < .0001$).

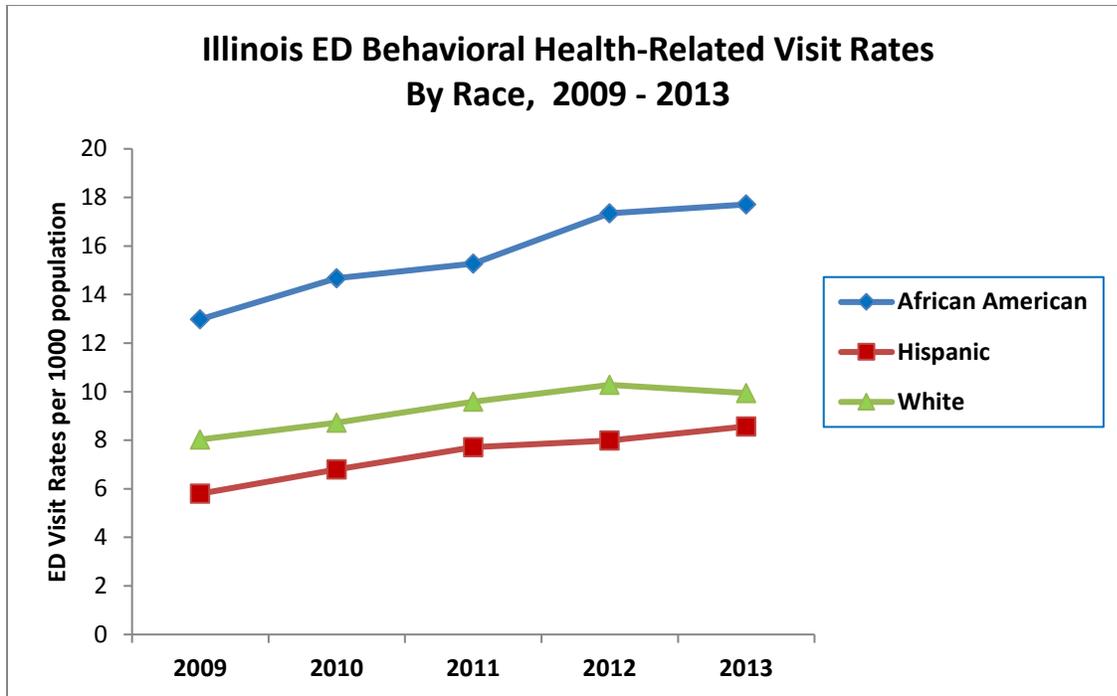
Table 13. Total Illinois Behavioral Health Emergency Department Visit Rates by Race/Ethnicity with Average Annual Percent Change (AAPC), 2009-2013.

Race/Ethnicity	2009	2010	2011	2012	2013	Average Annual Percent Change (AAPC)
African American	12.98	14.67	15.28	17.34	17.71	8.13*
Hispanic	5.8	6.8	7.72	7.99	8.57	9.49*
White	8.03	8.72	9.59	10.28	9.94	5.99*

* statistically significant ($p < 0.05$)

Figure 14 illustrates the trends in Illinois Behavioral Health-Related ED visits rates by race/ethnicity.

Figure 14. Trends in Total Behavioral Health-Related Illinois Emergency Department Visit Rates by Race/Ethnicity Rates, 2009-2013



Payer Mix of ED Visits

Emergency department visits were also analyzed by payer for calendar year 2013 for each of three major visit categories. (Table 14) The largest percentage of Total ED and Primary Care Sensitive visits was associated with Medicaid, followed by private insurance. In contrast, the highest percentage of behavioral health-related ED visits occurred among the uninsured at 32.97%. The rate of uninsured for all Illinoisans under age 65 in 2013 was 14.6%

Table 14. Percent of Total, Primary Care Sensitive, and Behavioral Health-Related ED visits by payer, calendar year 2013

Payer Mix	Total ED	Percent of	Primary Care	Primary Care Sensitive	Behavioral	Behavioral Health
	Visits	Total Cases	Sensitive Visits	(% of Total)	Health Visits	(% of Total)
Private Insurance	1,321,822	32.20%	600,904	28.74%	35,576	25.34%
Medicaid	1,404,932	34.20%	810,462	38.78%	38,002	27.07%
Medicare	634,011	15.40%	299,585	14.33%	20,510	14.61%
Uninsured/Other	749,769	18.20%	379,404	18.15%	46,286	32.97%

Efficiency and Cost Reduction – Making Quality Care More Affordable

Over the past decade the pace of health care spending has grown faster than inflation and national income. This growth is expected to continue to increase without intervention. An essential aim of the National Quality Strategy is to reduce the cost of quality health care for individuals, families, employers, and government. High quality health care becomes meaningful when it is affordable for the American public. Improvements in quality of care can also be mirrored by improvements in costs of care.

The Illinois Health Finance Reform Act states that public and private sector purchasers of health care need health care cost and utilization data to enable them to make informed choices among health care providers in the market place. The Illinois Department of Public Health, through publication of the Consumer Guide to Health Care provides utilization and charge data for a variety of inpatient and outpatient conditions and procedures. Below in Figure 15 and 16 are highlights in variation of charges for several inpatient conditions and outpatient procedures. Note that charges are list prices established by hospitals each year, not actual dollar amounts received in payment. All patients are charged the same list price for the same services before applying any discounts. Cost data are not available in the discharge data set.

Fig. 15 Variation from median charge for three inpatient conditions in Illinois hospitals, 10/1/13-9/30/14

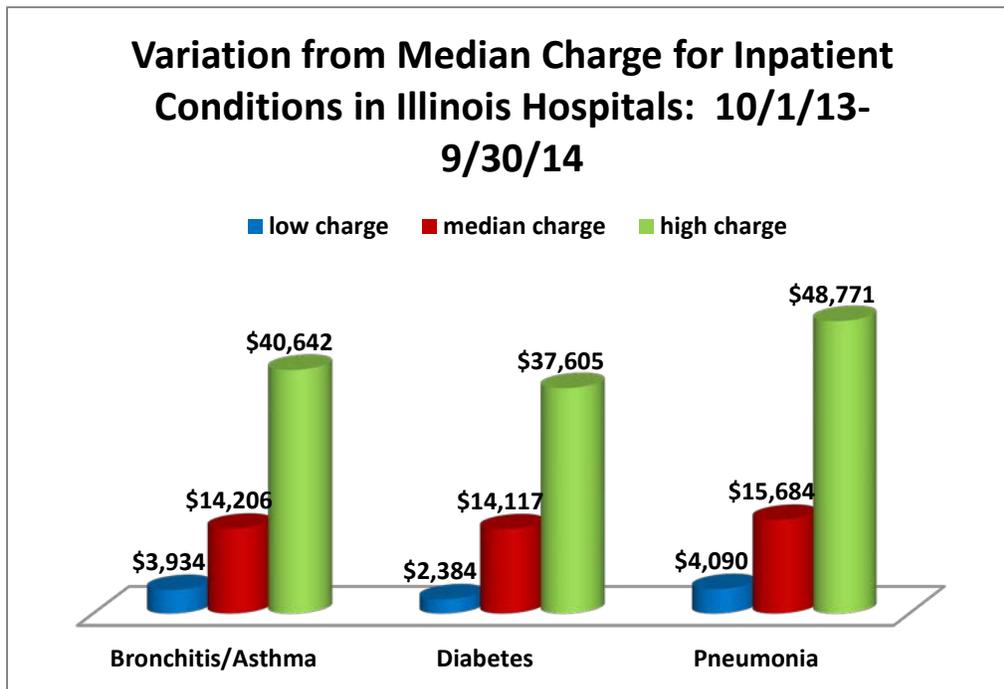
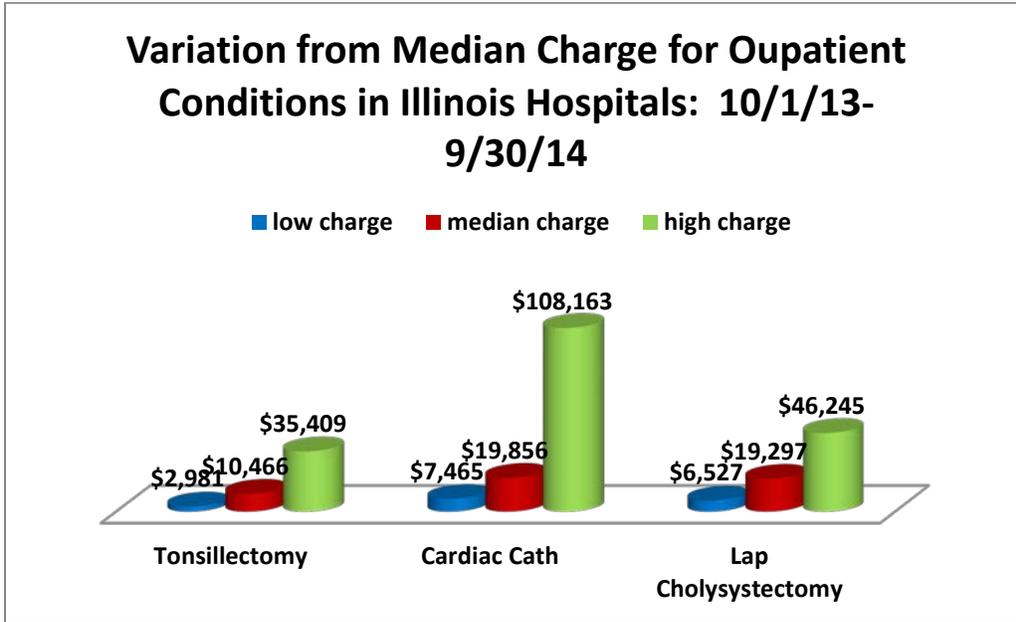


Fig. 16 Variation from median charge for three outpatient hospital procedures, 10/1/13-9/30/14



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