



Illinois Hospital Report Card

And

Consumer Guide to Health Care

Report to the General Assembly:

Fiscal Year 2016

(July 1, 2015 – June 30, 2016)

Division of Patient Safety and Quality

September 2016

This report highlights data published on the Illinois Hospital Report Card and Consumer Guide to Health Care website (www.healthcarereportcard.illinois.gov) by the Division of Patient Safety and Quality at the Illinois Department of Public Health. 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 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, 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 nineteen 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 eight releases since its' launch. 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 2015/2016 fiscal year (July 1, 2015 – June 30, 2016) and associated patient safety and quality initiatives. During this time, the website received an average of some 4,200 visits per month. Approximately 75 percent of visitors were new to the site. Sixty four percent of site visitors were female and 36 percent were male, and fifty percent of visitors were between 25 and 44 years old.

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 fiscal year 2016 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 Hospital Compare and other websites, but most of the measures are unique to the HRCCGHC.

Patient Safety: Making care safer by reducing harm caused in 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 (2). Hospital acquired HAIs alone are estimated to cost in excess of 28 billion dollars in preventable health care expenditures (3). 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, recently updated in 2013 that set specific 5 year target reduction goals for the top HAIs (4). Health and Human Services, the Center for Medicare and Medicaid,






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.

Illinois has seen significant improvements in the three health care-associated infections reported below by the Division compared to national baseline measures as measured by the standardized infection ratio. The standardized infection ratio, or 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 difference 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 statistically significant reductions for all infections compared to the national baseline referent. 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	2015 State SIR vs. Nat'l Baseline	2015 State SIR
CLABSI: Adult ICU	 48%	0.52 [^]
CLABSI: Neonatal ICU	 61%	0.39 [^]
CLABSI: Pediatric ICU	 46%	0.54 [^]
MRSA Bacteremia	 24%	0.76 [^]
<i>C. difficile</i> Infections	 4%	0.96 [^]

[^]statistically significant

To examine trends in Illinois HAIs more specifically over time, data for each infection type is summarized below. The trend analysis highlights changes within the state and can delineate in-state progress. Joinpoint regression version 4.1 was used for trend analysis, a software program developed by the U.S. National Cancer Institute for the analysis of data from the Surveillance Epidemiology and End Results Program (5). 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 these years 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.

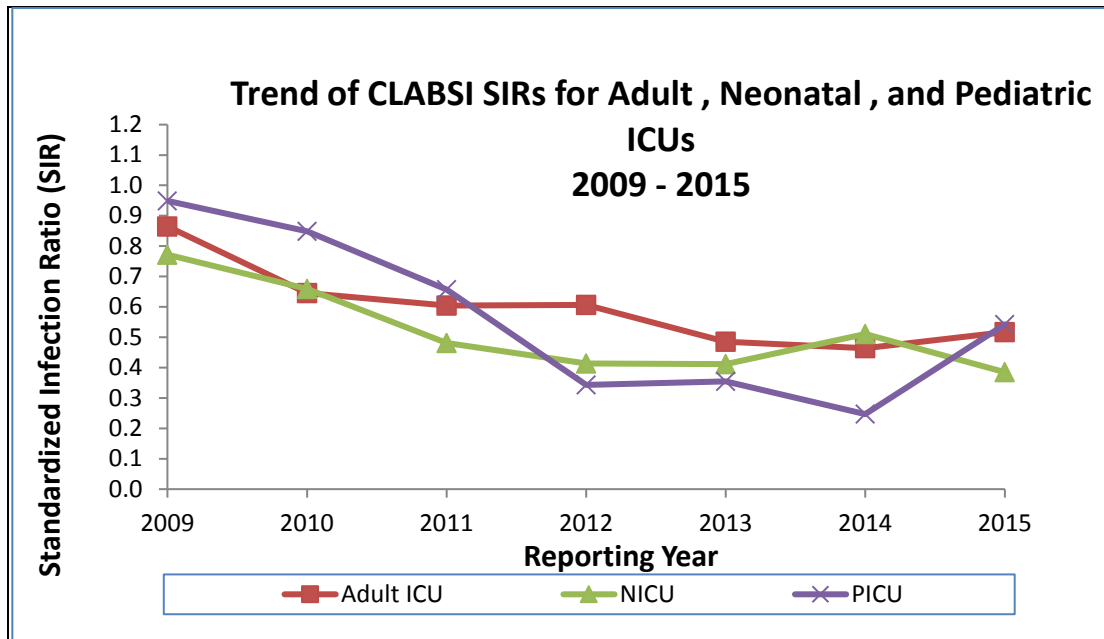
Table 2. Changes in CLABSI Standardized Infections Ratios (SIRs) in Illinois ICUs from 2009 - 2015

Year	2009	2010	2011	2012	2013	2014	2015	Annual Percent Change (APC)
All ICUs Combined	0.86	0.67	0.58	0.54	0.46	0.45	0.51	-7.9% ^
Adult ICUs	0.87	0.65	0.60	0.61	0.49	0.46	0.52	-8.3% ^
NICUs	0.77	0.66	0.48	0.41	0.41	0.51	0.39	-8.9% ^
PICUs	0.95	0.85	0.66	0.34	0.36	0.25	0.54	-8.9% ^

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

Figure 1 shows reductions in CLABSI SIR between 2009 and 2015 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 – 2015



Summary

Since 2009, the CLABSI SIR in Illinois acute care hospitals have been lower compared to the national referent SIR. This trend continues in reporting year 2015, where statistically significant reduction in CLABSI SIRs was achieved in all three intensive care settings – adult ICUs (AICU), neonatal ICUs (NICU) and pediatric ICUs (PICU). The reduction of CLABSIs was 48% in adult ICUs, 61% in NICUs, and 46% in PICUs, respectively. Refer to Table 1.

Trend analysis by year and ICU type of CLABSI SIR in Illinois Acute Care Hospitals from 2009 – 2015 were performed to assess percent change over time. Data analysis by year using Joinpoint regression indicates that the overall Illinois SIRs for CLABSIs have been steadily decreasing on the average of 7.9% per year since 2009. Individually, the annual percent change of SIRs for Adult ICU, NICU, and PICU have steadily decreased (8.3%, 8.9%, and 8.9% per year, respectively). The overall CLABSI adult ICU, Neonatal ICU, and pediatric ICU average annual percent change (AAPC) were all statistically significant. Refer to Table 2 for SIR and AAPC by ICU Type and by year.

Methicillin-Resistant *Staphylococcus aureus* (MRSA) Infection 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 Laboratory-identified (LabID) Event module. The LabID event surveillance method enables facilities to report proxy measures for healthcare acquired infections based on data obtained from the laboratory without clinical evaluation of the patient.

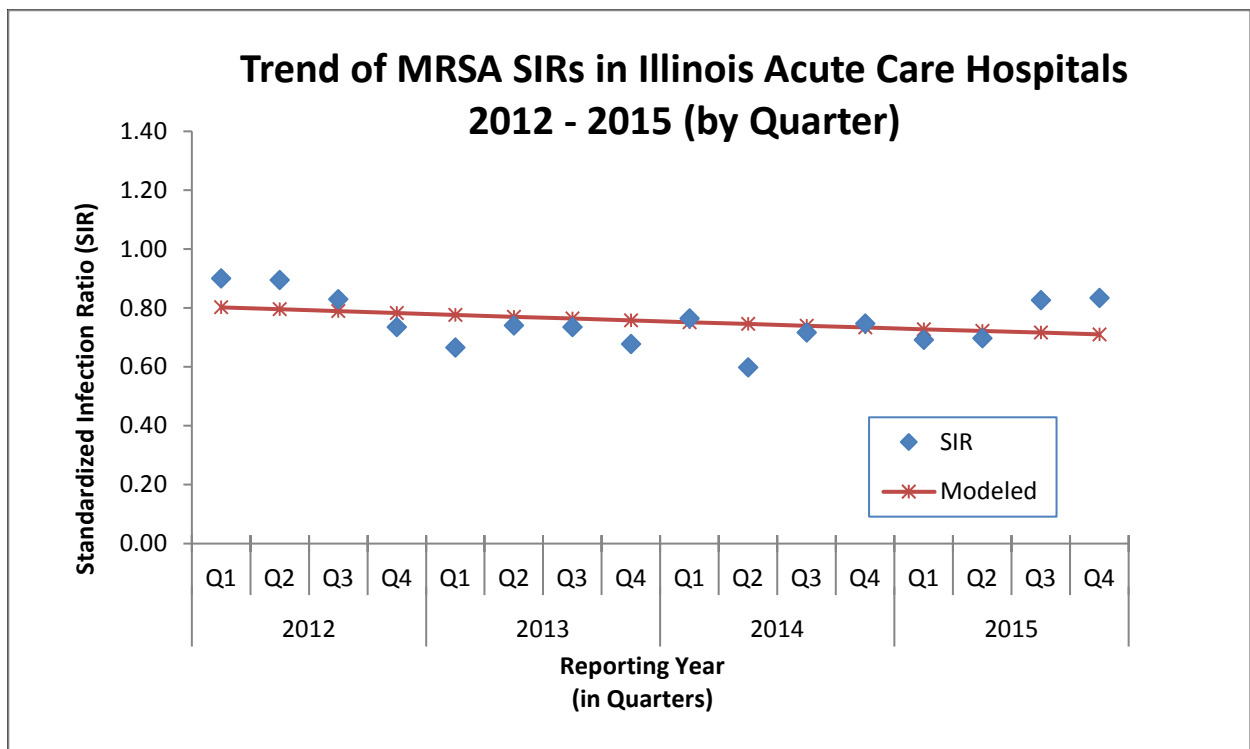
MRSA bacteremia data are summarized using the standardized infection ratio (SIR) over time. The average annual percent change (or AAPC) is reported quarterly for this summary. Table 3 below documents the SIR for MRSA quarterly for each of the four available reporting years.

Table 3. Trend of MRSA SIRs in Illinois acute care hospitals, 2012 – 2015 (by quarter)

MRSA	2012				2013				2014				2015			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
SIR	0.90	0.90	0.83	0.74	0.67	0.74	0.74	0.68	0.77	0.60	0.72	0.75	0.69	0.70	0.83	0.83
Modeled	0.80	0.80	0.79	0.78	0.78	0.77	0.76	0.76	0.75	0.75	0.74	0.73	0.73	0.72	0.72	0.71

The Illinois SIR values for MRSA are depicted over time in Figure 4 below.

Figure 2. Trend of MRSA SIRs in Illinois acute care hospitals, 2012 – 2015 (by quarter)



As summarized in Table 4 below, there is a 0.81% decrease in MRSA SIRs per quarter for the reporting period from 2012 through 2015. This percent decrease is not statistically significant.

Table 4. Percent Change in MRSA SIRs, 2012-2015

Reporting Years	Quarterly % Change (APC)	p-value (95% CI)	Statistical Interpretation
2012 - 2015	-0.81%	0.1637 (-2.034, 0.438)	The average quarterly percent decrease of 0.81% is not statistically significant

In addition, comparison of standardized infection ratios by year was performed to assess significant differences between reporting years. The percent change in SIR, 95% confidence interval, and p-value were calculated for each time period. Refer to Figure 3 and Table 5 for the comparative analysis of MRSA SIRs by year.

Figure 3. Trend of MRSA SIRs in Illinois acute care hospitals, 2012 – 2015 (by year)

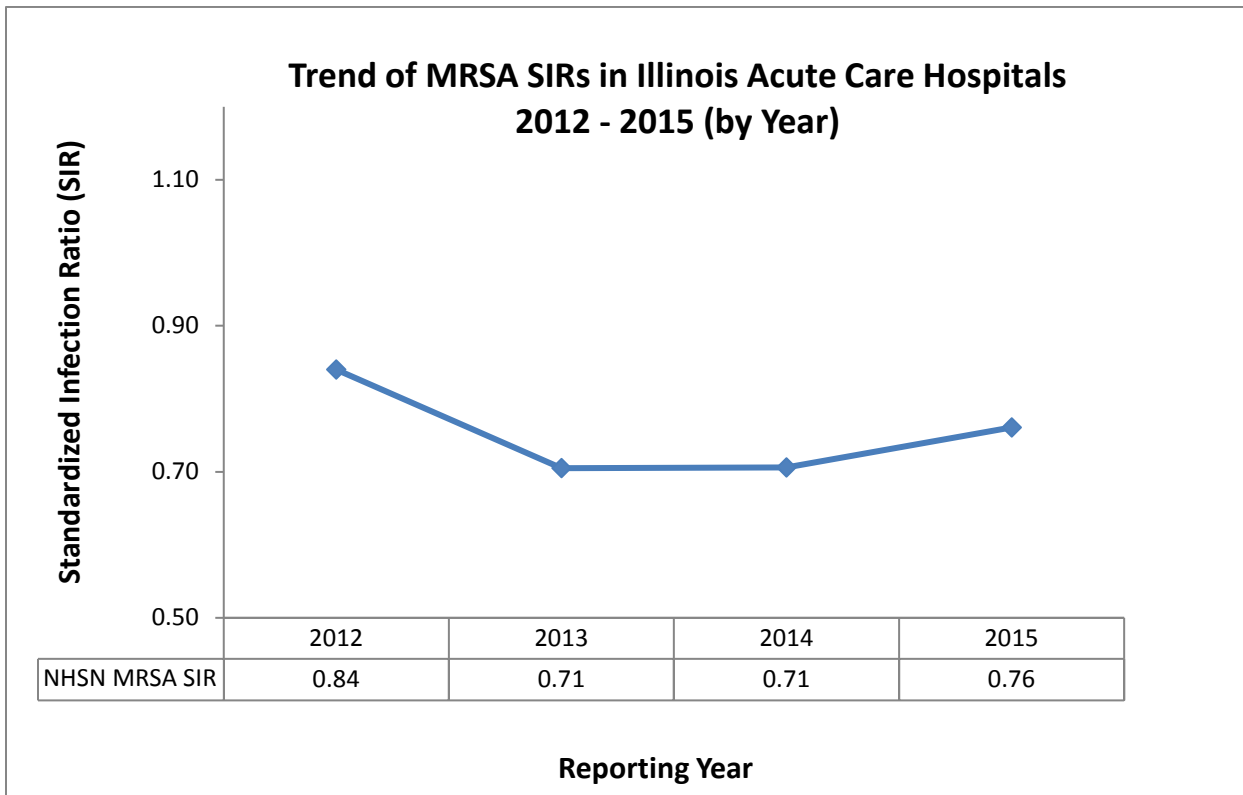


Table 5. Percent Change in MRSA SIRs, 2012 - 2015 (by year)

Reporting Period	% change in SIR (95% CI)	p-value (SIR)
2012 vs. 2013	-15.9% (0.72, 0.981)	0.0277 ^
2013 vs. 2014	-1.5% (0.838, 1.158)	0.8556
2014 vs. 2015	7.8% (0.913, 1.272)	0.3767
Overall change: 2012 vs. 2015	-10.8% (0.761, 1.046)	0.1613

^ The percent change is significantly different from zero at alpha = 0.05

Summary

Trend analysis by year and by quarter of MRSA SIR in Illinois Acute Care Hospitals from 2012 – 2015 were performed to assess percent change over time. Data analysis by quarter using Joinpoint analysis indicates that Illinois SIRs for MRSA bloodstream infections have been steadily decreasing on average of 0.81% per quarter for the 4-year period of 2012 through 2015 (Table 3). This quarterly percent decrease of MRSA SIR is not statistically significant (p-value = 0.1637).

Comparative analysis of MRSA SIRs were analyzed by year and summarized in Table 4. From 2012 to 2013, there was a significant decrease of 15.9%, followed by another decrease of 1.5% from 2013 to 2014. However, an increase of 7.8% was observed from 2014 to 2015. Overall, Illinois acute hospitals have seen a steady decrease of 10.8% in MRSA SIR since 2012. This percent decrease is not statistically significant (p-value = 0.1613).

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

As of January 1, 2012, all Illinois hospitals began mandated reporting of cultures positive for *Clostridium difficile* Infections (CDI) using the Center for Disease Control and Prevention’s National Healthcare Safety Network (NHSN) Multidrug-Resistant Organism Laboratory-identified (LabID) Event module. The LabID event surveillance method enables facilities to report proxy measures for healthcare acquired 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. The average annual percent change (or AAPC) is reported quarterly for this summary

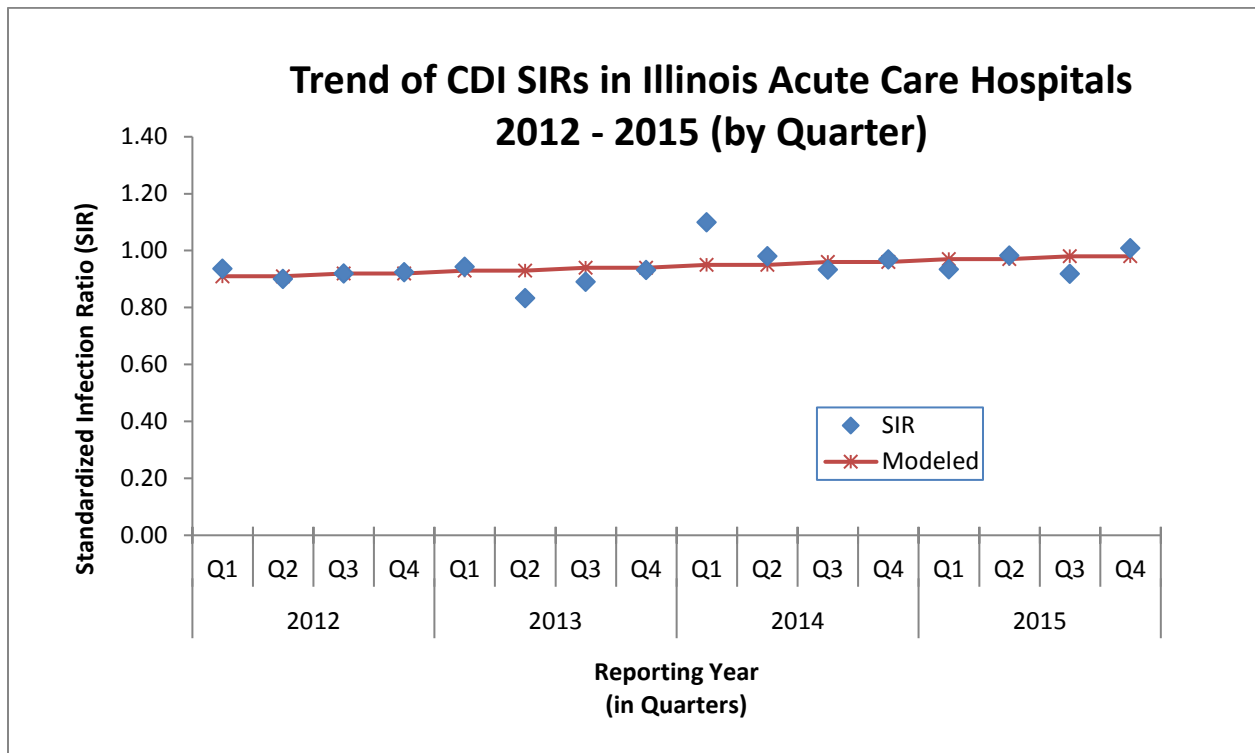
Joinpoint analysis of quarterly NHSN CDI SIR Data is summarized in Table 6 and Figure 4. Both the observed and modeled CDI SIRs are shown.

Table 6. Trend of CDI SIRs in Illinois acute care hospitals, 2012 – 2015 (by quarter)

CDI	2012				2013				2014				2015			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
SIR	0.94	0.90	0.92	0.92	0.94	0.83	0.89	0.93	1.10	0.98	0.93	0.97	0.93	0.98	0.92	1.01
Modeled	0.91	0.91	0.92	0.92	0.93	0.93	0.94	0.94	0.95	0.95	0.96	0.96	0.97	0.97	0.98	0.98

The Illinois quarterly SIR values for CDI are displayed over time in Figure 4 below.

Figure 4. Trend of CDI SIRs in Illinois acute care hospitals, 2012 – 2015 (by quarter)



As summarized in Table 7 below, there is a 0.50% increase in CDI SIRs per quarter for the reporting period from 2012 through 2015. This percent increase is not statistically significant.

Table 7. Percent Change in CDI SIRs

Reporting Years	APC	p-value (95% CI)	Statistical Interpretation
2012 - 2015	0.50%	0.1174 (-0.1834, 1.1862)	The average quarterly percent increase of 0.5% is not statistically significant

In addition, comparison of standardized infection ratios by year was performed to assess significant differences between reporting years. The percent change in SIR, 95% confidence interval, and p-value were calculated for each time period. Refer to Figure 5 and Table 8 for the comparative analysis of CDI SIR by year.

Figure 5. Trend of CDI SIRs in Illinois acute care hospitals, 2012 – 2015 (by year)

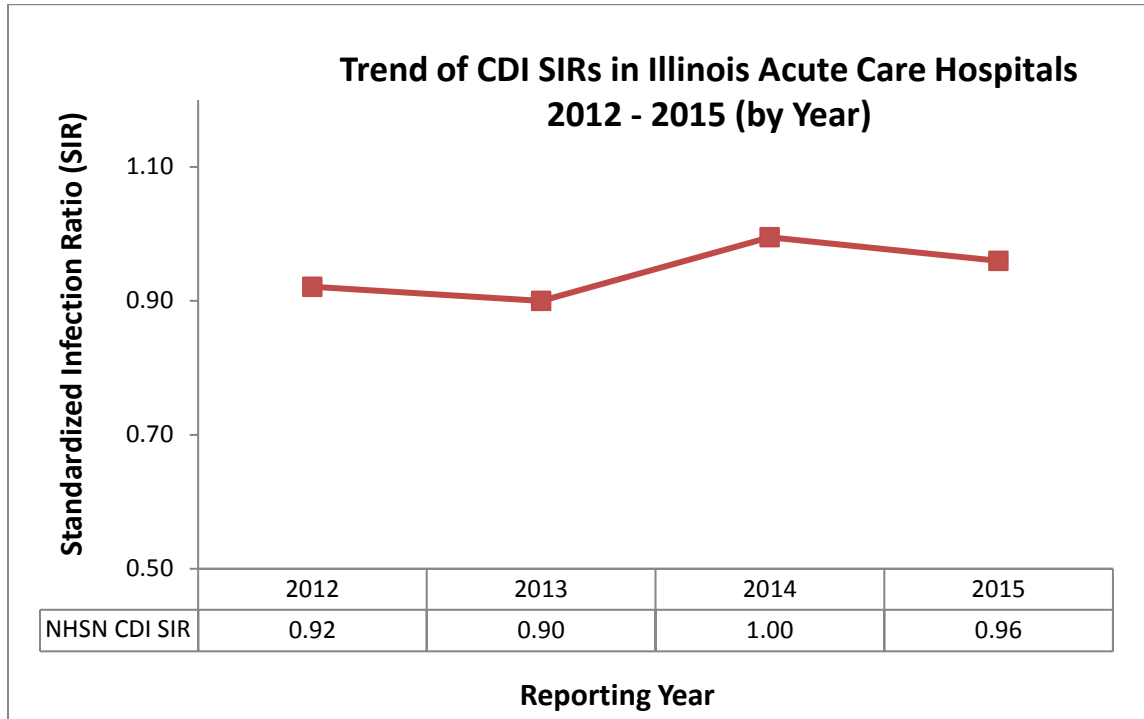


Table 8. Percent Change in CDI SIRs, 2012 - 2015 (by year)

Reporting Period	% change in SIR (95% CI)	p-value (SIR)
2012 vs. 2013	-2.3% (0.938, 1.019)	0.279
2013 vs. 2014	10.1% (1.057, 1.147)	0.0001 ^
2014 vs. 2015	-3.5% (0.926, 1.006)	0.0901
Overall change: 2012 vs. 2015	3.8% (0.996, 1.082)	0.0744

^ The percent change is significantly different from zero at alpha = 0.05

Summary

Trend analysis by year and by quarter of CDI SIR in Illinois Acute Care Hospitals from 2012 – 2015 were performed to assess percent change over time. Data analysis by quarter using Joinpoint regression indicates that Illinois SIRs for CDI have been steadily increasing on average of 0.5% per quarter for the 4-year period of 2012 through 2015 (Table-6). This quarterly percent increase in CDI SIR is not statistically significant (p-value = 0.1174) (Table 7).

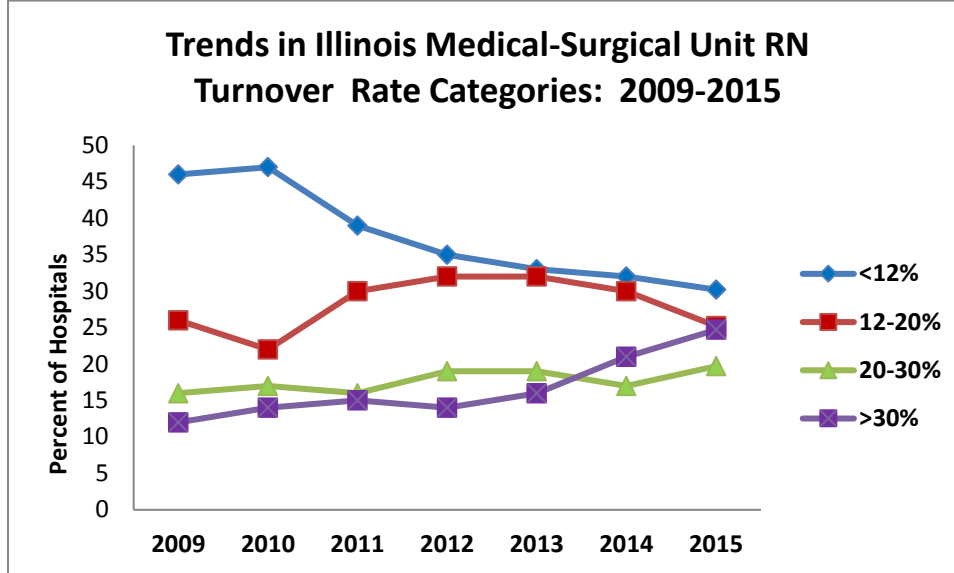
Comparative analysis of CDI SIRs were analyzed by year and summarized in Table 8. From 2012 to 2013, there was a decrease of 2.3%, followed by a significant increase of 10.1% from 2013 to 2014, and then a decrease of 3.5% from 2014 to 2015. Overall, Illinois acute hospitals have seen an increase of 3.8% in CDI SIR since 2012. This percent increase is not statistically significant (p-value = 0.0744)

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 (6).

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 (7). Hospitals with official "Magnet Designation" reported overall R.N. turnover rates of 10.72% in February 2014 (8). 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 182 acute care hospitals 68% reported a turnover rate higher than is considered optimal in medical/surgical units for the year 2015. Trend data on R.N. turnover is presented below from 2009 through 2015 in Figure 6. 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%, steadily decreased between 2010 and 2015. In contrast, the percent of hospitals falling into the >30 percent turnover category has been increasing. Continued monitoring of these trends is indicated.

Fig. 6 Trends in Medical/Surgical RN Turnover Rate Categories in Illinois Acute Care Hospitals: 2009-2015

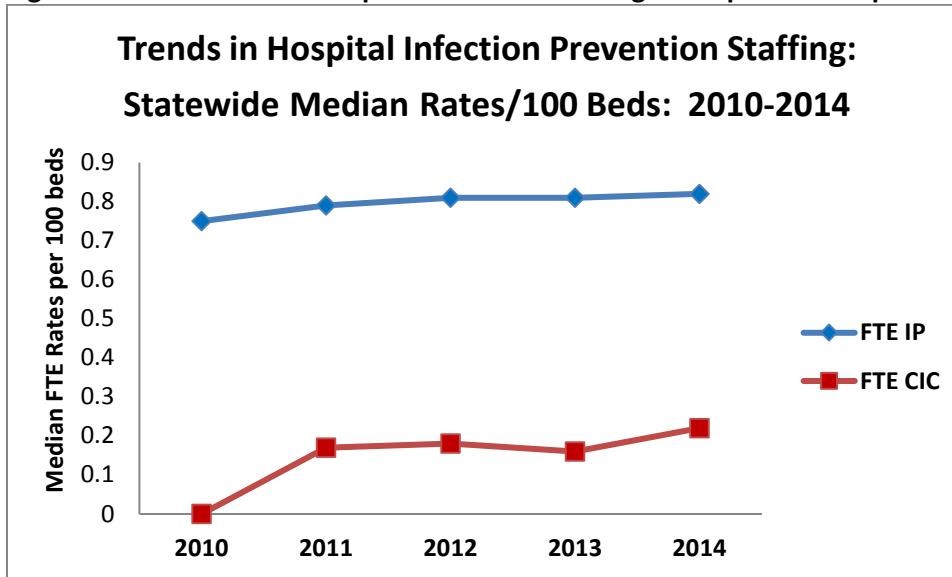


Infection Prevention Staffing

Infection prevention professionals play a key role in reducing the 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 (9). 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 median statewide staffing rates for infection preventionists (IPs) and certified infection preventionists (CIC) are highlighted in Figure 7. During this reporting period, fifty percent of hospitals had IP staffing rates below the recommended 0.8-1.0 Delphi Project target. Between 2010 and 2014 statewide median staffing rates for IPs ranged from 0.75-0.82 per 100 beds. Although there are no recommended staffing targets for CIC, median statewide staffing rates during this reporting period ranged from zero to 0.22 per 100 beds, rising slightly but remaining low overall. This analysis includes all Illinois acute care hospitals - rural, urban, large and small acute care facilities (Figure7).

Figure 7 Trends in Illinois Hospital IP and CIC Staffing Rates per 100 Hospital Beds: 2010-2014

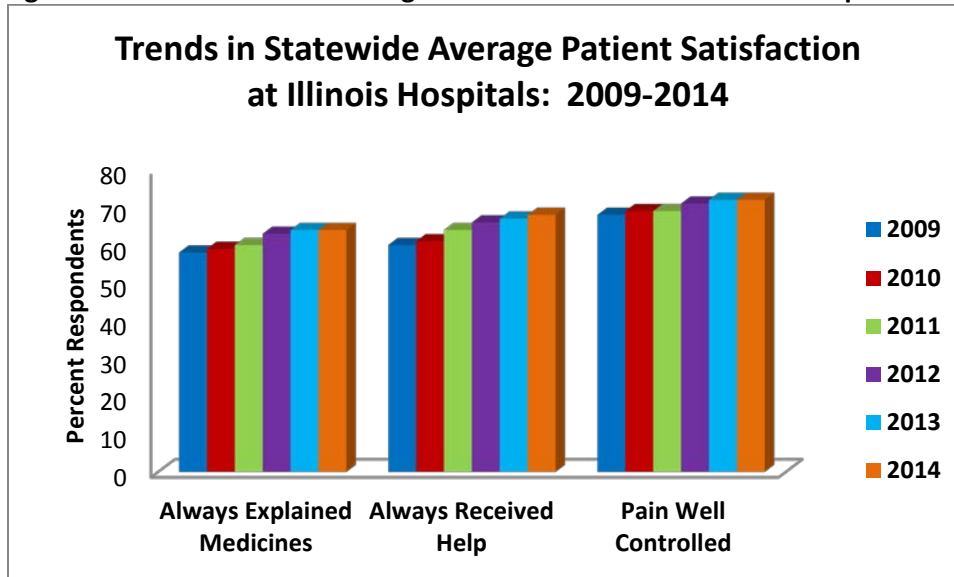


Person and Family-Centered Care – Ensuring that each person and family are engaged as partners in their care

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 8 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. 8 Trends in Statewide Average Patient Satisfaction at Illinois Hospitals: 2009-2014

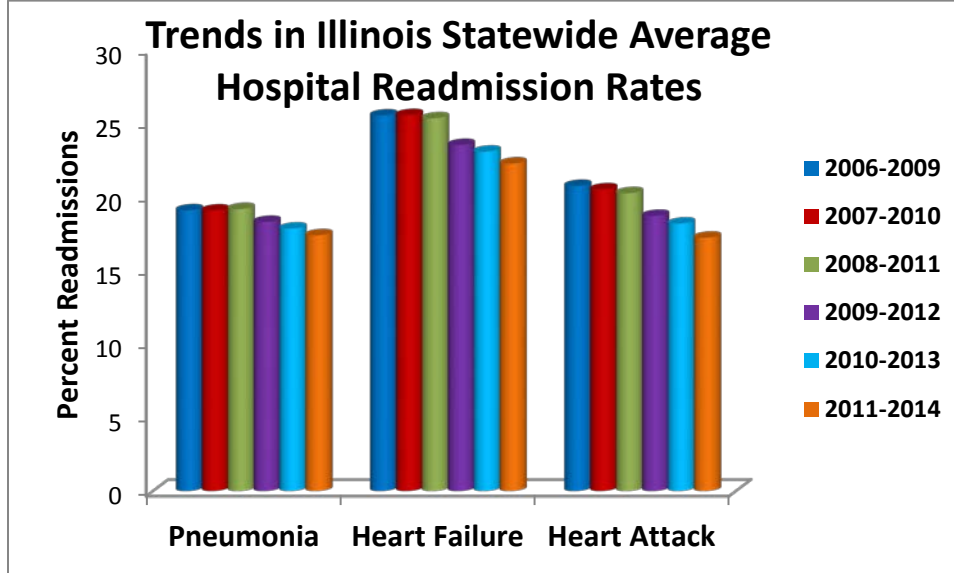


Coordination of Care – Promoting effective communication and coordination of care

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 in Figure 9 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 six reporting periods. Note that rates are trending downward as part of initial efforts to reduce readmission rates by 20 percent.

Fig. 9 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 (11). 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, maternal/child and behavioral health conditions. Below are data from the Illinois HRCCGH 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). Overall it has been shown that the longer a woman breastfeeds, the greater the protective benefit.

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%

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 (WHO), 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 % (14). Nine Illinois hospitals currently have the WHO baby friendly designation as of June 2016 - almost double that of last year and accounting for 7.8% of the 116 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 (15). CDC is now updating the Breast Feeding Report Card every two years, with no report specific to 2014 data or beyond as of yet.

Data on Illinois hospital lactation consultant staffing has been published on the Hospital Report Card for the past two years. 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” for 2014. Approximately 20% of birthing hospitals did not have CLC staffing and 37% had no IBCLC . The statewide average hospital staffing rate was 1.45 CLC and 0.92 IBCLC per 1000 live births for reporting year 2014. 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

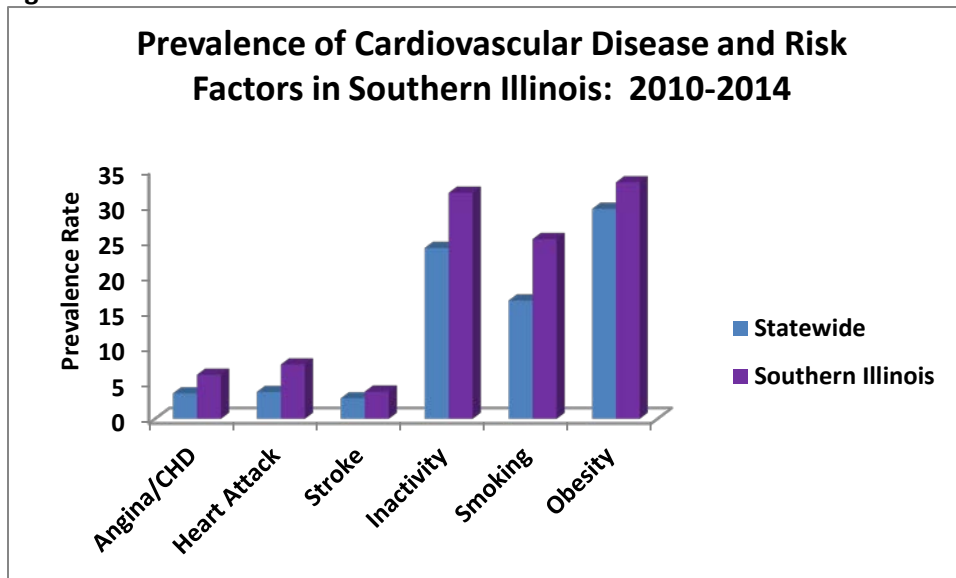
Despite significant decline in recent years, cardiovascular disease is still the leading cause of mortality in this country. It accounts for one of every three deaths in the country and over \$503 billion in expenditures annually (20). In Illinois, cardiovascular disease mirrors the national picture. 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 can often be 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.

This past year, a module on Cardiovascular Disease was added to the Illinois Public Health Community Map feature of the HRCCGHC website. The Map makes information about the quality of health in Illinois communities available to the public. Data on prevalence of heart disease from the Illinois Behavioral Risk Factor Surveillance System survey was published for Illinois regions and counties for reporting period 2010 through 2014. In addition, emergency room visits for hypertension were published including by zip code for Cook County.

Of the six major regions in Illinois shown on the Map, southern Illinois stands out as having the highest rates for the majority of cardiovascular disease measures presented on the Map. Rates were higher for three cardiovascular disease conditions and three cardiovascular disease risk factors as shown in Figure 10 below. Southern Illinois also had the highest regional rate of Emergency Department visits for hypertension in the state, with a rate of 24.7 per 10,000 population.

Figure 10 Cardiovascular Disease and Risk Factor Prevalence in Southern Illinois and Illinois Statewide



*Data Source: Illinois Behavioral Risk Factor Surveillance System

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 for Cook County and Chicago, by sub-region and zip code. 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 February 2016 the majority of current measures on the Map were updated to reflect combined calendar reporting years 2012 through 2014. In March 2016 new measures on Cardiovascular Disease were added as well as Social/Environmental measures of concentrated disadvantage and severe housing problems. In June 2016, a new module on Behavioral Health was added to the site with initial measures on emergency department visits for mood disorders, alcohol and substance-related disorders.

Behavioral health, which includes mental health, alcohol and substance use related issues, is a public health priority both globally and in Illinois. Mental health disorders are one of the most common causes of disability. In the United States, it is estimated that 18% of adults (43.6 million) are affected with mental illnesses and another 22 million struggle with a drug or alcohol problem (17). There is a world-wide gap between those with severe mental health disorders and the provision of treatment and care. In high income countries like the U.S., an estimated 35-50% of people with severe mental illness receive no care (18). This issue was reflected in the recent Illinois State Health Assessment. As a result, Behavioral health has become one of the state's top three priorities for improvement outlined in the new 2016 State Health Improvement Plan (19).

Below are highlights of initial data on emergency department visits for behavioral health that were added to the Illinois Public Health Community Map. 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/behavioral health; 3) timely provision of health care when needed; and 4) having an adequate workforce of primary care physicians and behavioral health providers. Ensuring access to high quality health care, reducing inappropriate care and decreasing costs are key aims of the national quality agenda.

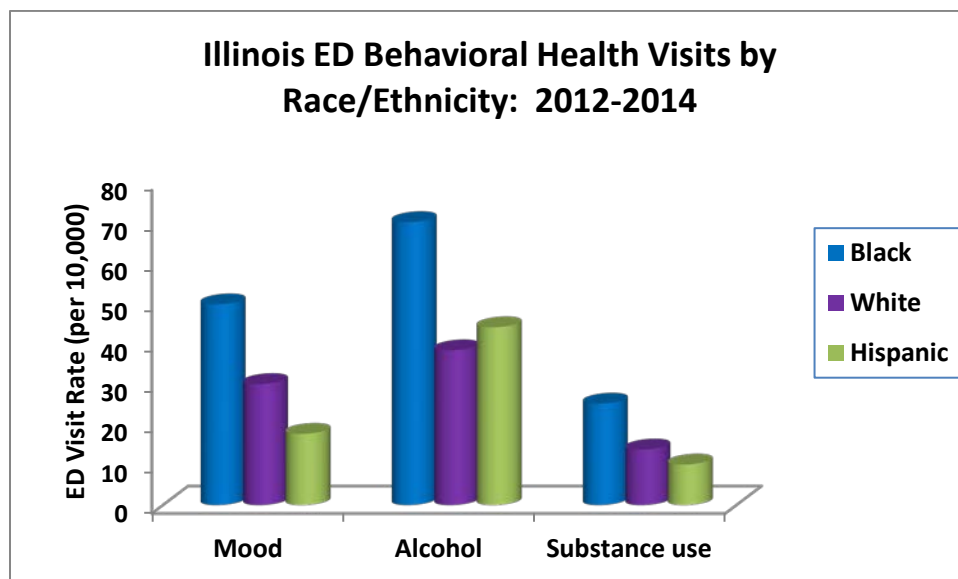
Data from 2012 to 2014 indicate that each year there were over 90,000 adult Emergency Department visits for mood disorders, alcohol, and substance-related issues. These visits resulted in an average of \$300,000,000 in charges annually. Of the three conditions, visits for alcohol-related disorders was the most common type of visit and had the highest visit rates. See Table 9 for further description.

Table 9. Average Annual Number, Rate, and Charges for Emergency Department Visits for Alcohol, Mood Disorders, and Substance-related conditions among Adults ages 18 and over, 2012-2014

	Average Annual Number of Emergency Dept Visits	Rate of Emergency Dept Visits (per 10,000 people)	Average Annual Charges
Alcohol Related	43,607	44.76	\$156,458,132
Mood Disorders	32,197	33.05	\$98,091,562
Substance Related	14,740	15.13	\$46,746,997

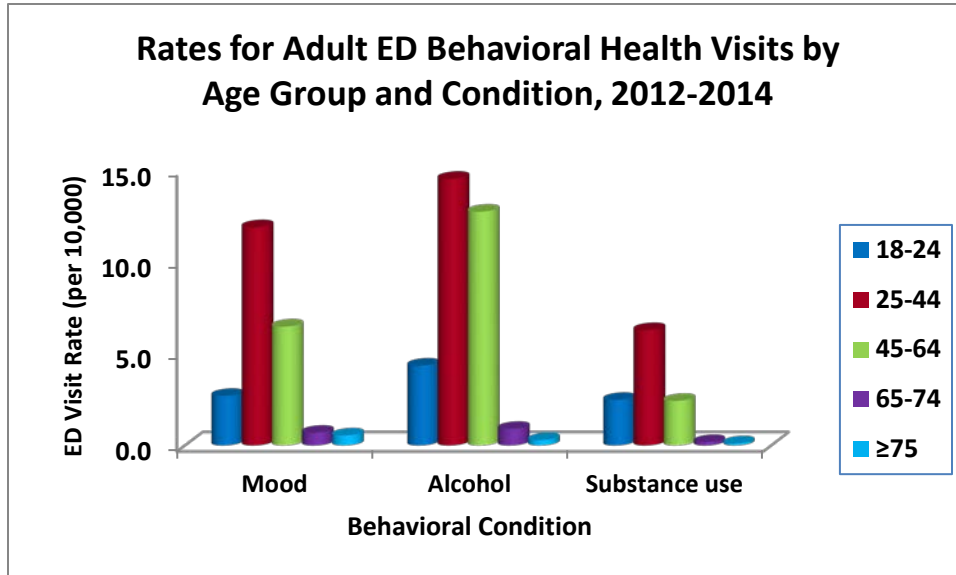
Emergency Department visits for the three behavioral health conditions burden African Americans and younger adults the most. African Americans had 1.7 times higher visit rates for mood disorders than White Americans, and 1.8 times higher visit rates for both alcohol and substance-related conditions. Figure 11 below highlights these data.

Figure 11. Illinois Emergency Department Visit Rates for Mood Disorders, Alcohol, and Substance-related Conditions by Race/Ethnicity, 2012-2014



Among adults age 18 and older, the age group with the highest visit rates for each of the three conditions discussed above was among the 25-44 year olds. This was followed by the 44-64 year olds, with the exception of substance-related Emergency Department visits where rates for 18-24 year olds and 44-64 year olds were very similar. Figure 12 illustrates the visit rates by age group for each of the three behavioral health conditions.

Figure 12. Illinois Adult Emergency Department Visit Rates for Mood Disorders, Alcohol, and Substance-related Conditions by Age Group, 2012-2014.



Rates of Emergency Department behavioral health visits vary geographically. For example, the county with the highest rate of mood disorder visits was Sangamon County, where the state capitol sits. The rate for Sangamon County was twice as high as the rate for the state as a whole - 79.78 per 10,000 population versus 33.05 per 10,000 population for the statewide rate. For substance-related visits, the highest rates for the state were found in four zip codes located on the West Side of Chicago in Cook County. The zip code with the highest rate, 60644, had a rate of 94.36 per 10,000 population.

Alcohol-related Emergency Department visits were highest in Northeastern Illinois. Cook County, which is located in the region, had the highest county-level rate in the state (58.9 in Cook County versus 44.76 in the state). Metropolitan Chicago sits within Cook County and data are presented at the zip code and sub-county regional level. The highest rates were found in this more granularly presented data as shown below. Figure 13 highlights the zip codes in Cook County with higher rates shown in red. Zip code 60612 had the highest rate – 201.41 per 10,000 population.

Figure 13 Alcohol-related Emergency Department Visits in Cook County, Illinois by zip code, 2012-2014

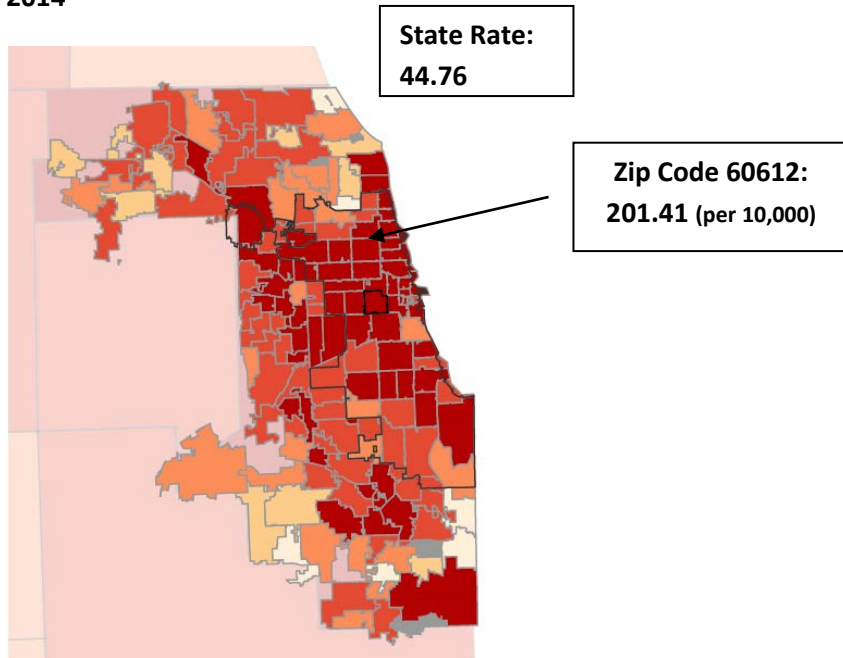
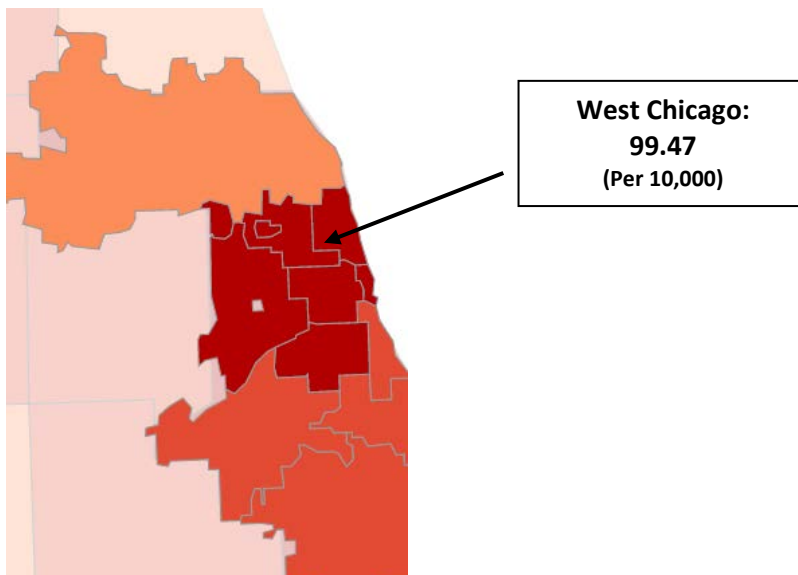


Figure 14 highlights the alcohol-related Emergency Department visits by Cook County sub-region, which provides another geographic view. Note that the West Chicago sub-region, of which zip code 60612 is a part, has the highest sub-regional rate. Providing geographic information can help identify specific communities for targeting public health prevention activities.

Figure 14 Alcohol-related Emergency Department Visit Rates by Cook County, Illinois by Sub-Region, 2012-2014



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. Figure 15 and 16 highlight variations in charges amongst hospitals 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, 10/1/14-9/30/15

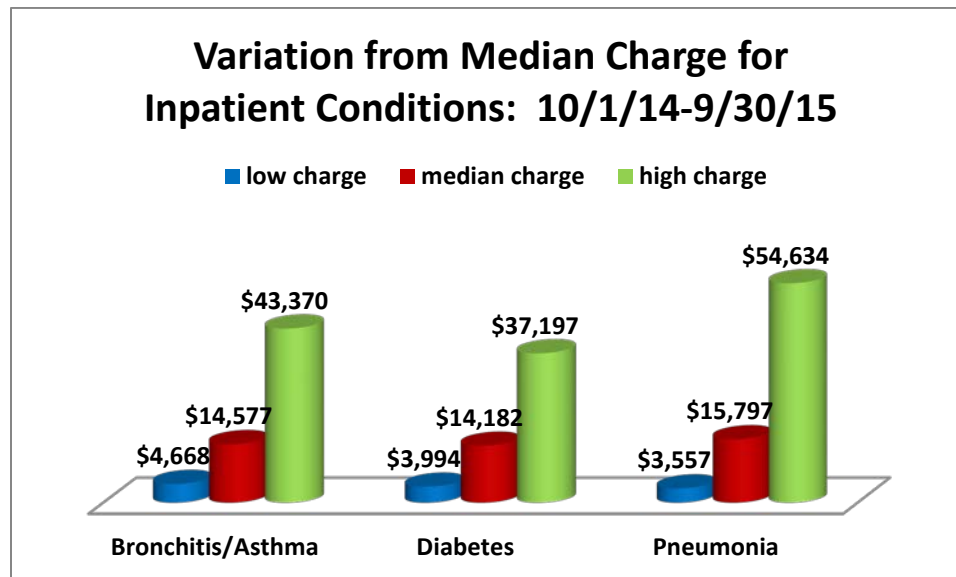
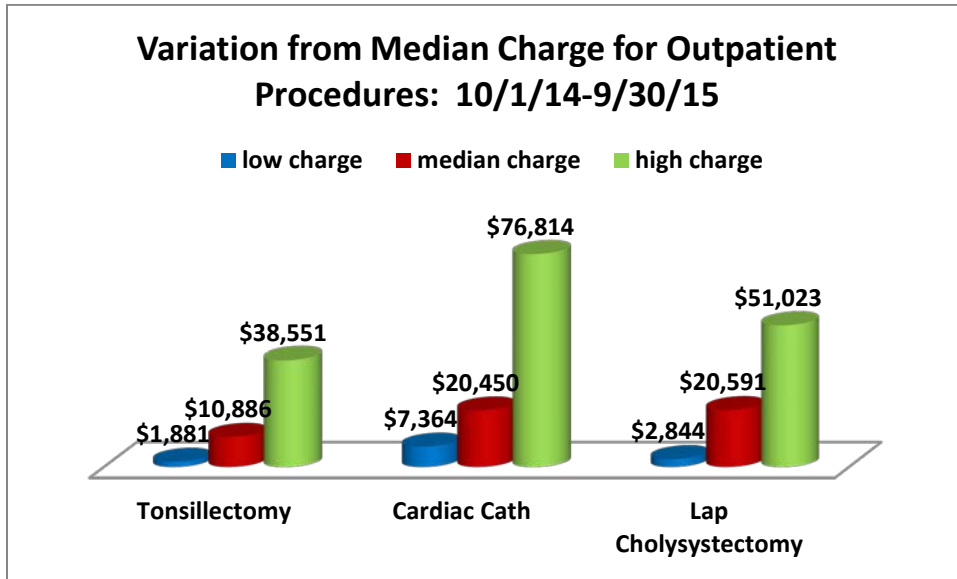
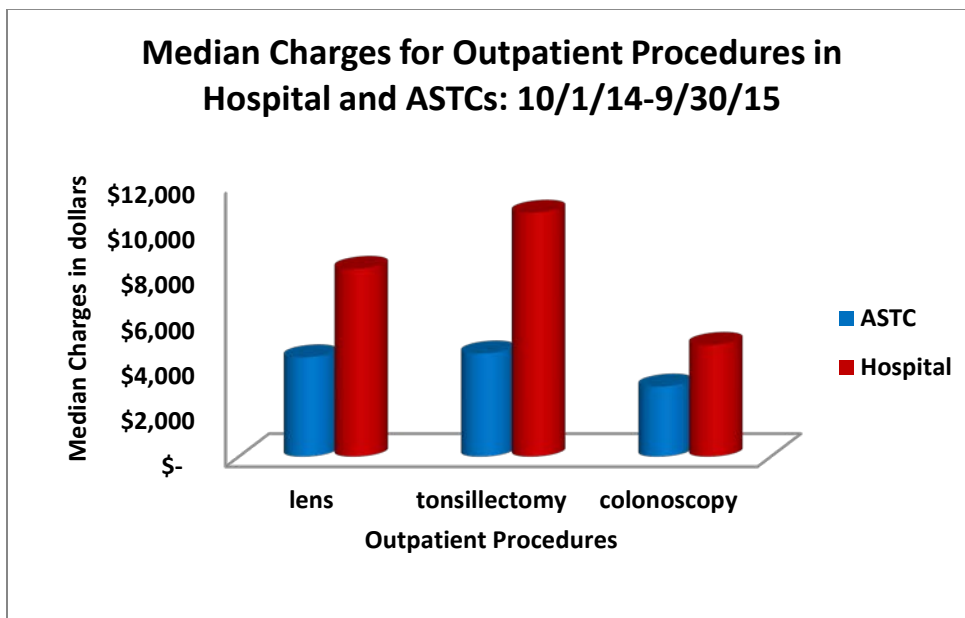


Fig. 16 Variation from median charge for three outpatient hospital procedures, 10/1/14-9/30/15



Variation in charges for outpatient procedures also occurred between hospitals and ambulatory surgery treatment centers, or ASTCs. Figure 17 highlights some of these differences in charges for several procedures below.

Fig. 17 Variation in statewide median charges between hospitals and ASTCs for three outpatient procedures, 10/1/14-9/30/15



References

1. Health and Human Services, Report to Congress: National Strategy for Quality Improvement in Health Care; March 2011. Available from: <http://www.ahrq.gov/workingforquality/nqs/nqs2011annlrpt.pdf>
2. Klevens M, Edwards JR, et al. Estimating health Care-Associated Infections and Deaths in U.S. hospitals. Public Health Reports 2007;122: 160-166.
3. Scott II RD. The Direct Medical Costs of Health Care-Associated Infections in U.S. Hospitals and the Benefits of Prevention. Division of health Care Quality promotion, National Center for Preparedness, Detection and Control of Infectious Diseases, Centers for Disease Control and Prevention 2009. Available from http://www.cdc.gov/HAI/pdfs/hai/Scott_CostPaper.pdf .
4. Health and Human Services. National Action Plan to Prevent Health Care-Associated Infections: Road Map to Elimination; April 2013. Available from: <https://health.gov/hcq/prevent-hai-action-plan.asp> .
5. Kim HJ, Fay MP, Feuer EJ, Midthune DN. Permutation Tests for Joinpoint Regression with Applications to Cancer Rates. Stat Med 2000;19: 335–51
6. Aiken L, Sloane D, Cimiotti J, Clark, S, Flynn L, Spetz J, Seago J, and Smith H. Implications of California Nurse Staffing Mandate for Other States. Health Services Research 2010;45: 904-921.
7. VHA Research Series. The Business Case for Workforce Stability. 2002; 1-16.
8. American Nurses Credentialing Center. Characteristics of Magnet Organizations. Feb. 2014. Available from: <http://www.nursecredentialing.org/CharacteristicsMagnetOrganizations.aspx>
9. O'Boyle C, Jackson M, and Henly SJ. Staffing Requirements for Infection Control Programs in US Health Care Facilities: Delphi Project. American Journal of Infection Control 2002;30(6): 321-333.
10. Jencks S, Williams M and Coleman E. Rehospitalizations Among Patients in the Medicare Fee-for-Service Program. New Engl J Med. 2009;360: 1418-1428.
11. *Ibid* [1]
12. U.S. Department of Health and Human Services. The Surgeon General's Call to Action to Support Breastfeeding. Washington, DC: U.S. Department of Health and Human Services, Office of the Surgeon General 2011. Available from: <http://www.surgeongeneral.gov/library/calls/breastfeeding/calltoactiontosupportbreastfeeding.pdf>

13. U.S. Department of Health and Human Services. Your Guide to Breast Feeding. Washington, DC: U.S. Department of Health and Human Services, Office of Women's Health; Jan 2011. <http://www.womenshealth.gov/publications/our-publications/breastfeeding-guide/breastfeedingguide-general-english.pdf>
14. U.S. Department of Health and Human Services, Office of Disease Prevention and Health Promotion. Healthy People 20/20, Maternal, Infant and Child Health, Baby Friendly Hospital Goal 2015. Available from: <https://www.healthypeople.gov/2020/topics-objectives/topic/maternal-infant-and-child-health/objectives>
15. CDC National Center for Chronic Disease Prevention and Health Promotion, Division of Nutrition, Physical Activity, and Obesity, Breastfeeding Report Card United States, 2014. Available from: <http://www.cdc.gov/breastfeeding/pdf/2014breastfeedingreportcard.pdf>
16. *Ibid* [1]
17. Center for Behavioral Health Statistics and Quality. Behavioral health trends in the United States: Results from the 2014 National Survey on Drug Use and Health. 2015. HHS Publication No. SMA 15-4927, NSDUH Series H-50. Available from: <http://www.samhsa.gov/data/sites/default/files/NSDUH-FRR1-2014/NSDUH-FRR1-2014.htm>
18. World Health Organization. Mental Health Action Plan 2013-2020, 2013. Available from: file:///C:/Users/Bfischer/Downloads/9789241506021_eng.pdf .
19. Illinois Department of Public Health. Healthy People 2021 State Health Improvement Plan, 2016. Available from: <http://dph.illinois.gov/sites/default/files/featuredhealthtopic/State-Health-Improvement-Plan-FINAL-080316.pdf>