2021

Issued August 2022

Healthcare-Associated Infections in North Carolina

Reporting Period:
January 1, 2021—December 31, 2021

NC DEPARTMENT OF HEALTH AND HUMAN SERVICES
Division of Public Health

Communicable Disease Branch • Medical Consultation Unit • Surveillance for Healthcare Associated and Resistant Pathogens Patient Safety (SHARPPS) Program • **www.ncdhhs.gov/** • **NCDHHS is an equal opportunity employer and provider. • 0 copies of this public document were printed at a total cost of $0 or $0 each. • 08/2022**

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Overview of Healthcare-Associated Infections in North Carolina

The U.S. Centers for Disease Control and Prevention (CDC) estimates that healthcare-associated infections (HAIs) affect one in 31 hospitalized patients, culminating in approximately 687,000 infections and 72,000 deaths each year[1] as well as $28–$33 billion in excess costs.[2] In North Carolina, HAIs result in approximate direct costs to facilities ranging from $124 million to $348 million annually.[3] In 2021, 3,595 HAIs were reported by North Carolina acute care hospitals, resulting in more than $41 million* of excess cost.[4] These numbers likely underestimate the true burden of HAIs because they include only a subset of acute care hospitals and healthcare-associated infections. This report is intended to provide an understanding of the burden of healthcare-associated infections in North Carolina in 2021.

Click here for fast facts about HAIs in North Carolina.

HAIs are infections caused by a variety of organisms, including bacteria and fungi, acquired while receiving medical care. Hospitals are required to report specific types of HAIs to the North Carolina Department of Health and Human Serivces, Division of Public Health (NC DPH). This report focuses on five important types of HAIs that occurred while patients were hospitalized in acute care hospitals from January 1, 2021 through December 31, 2021. These infections include:

1. Central line-associated bloodstream infections (CLABSI)
2. Catheter-associated urinary tract infections (CAUTI)
3. Surgical site infections (SSI) occurring after inpatient abdominal hysterectomies or colon surgeries
4. Laboratory-identified bloodstream infections caused by methicillin-resistant *Staphylococcus aureus* (MRSA)
5. Laboratory-identified infections caused by *Clostridioides difficile* (CDI)

The prevention of healthcare-associated infections is a public health priority in North Carolina and is a collaborative effort between the healthcare and public health communities. This report is a product of this collaboration and is prepared by the Surveillance for Healthcare-Associated and Resistant Pathogens Patient Safety (SHARPPS) Program located in the Communicable Disease Branch of the Epidemiology Section of the North Carolina Division of Public Health (NC DPH). Report definitions are available in Appendix A. The report is provided as a resource for healthcare providers and the general public to provide information about state HAI prevention progress. Consumers can use this information to learn more about HAIs, and to take ownership of their healthcare by asking infection prevention questions when coming into contact with healthcare facilities. Providers can use this report to compare statewide and hospital-specific progress to the national experience.

The mission of the NC SHARPPS Program is to collaborate with healthcare providers, local health departments, and other partners to prevent, detect, and respond to events and outbreaks of healthcare-associated and antimicrobial-resistant infections in North Carolina.

The SHARPPS Program has four key program areas to achieve this mission: 1) infrastructure; 2) surveillance, investigation, and response; 3) prevention, education, and training; and 4) monitoring, evaluation and communication. The Program works to eliminate preventable infections in healthcare settings by:

1. Conducting statewide surveillance for selected HAIs;
2. Providing useful, unbiased information to healthcare providers and consumers through public reports;
3. Promoting and coordinating prevention efforts;
4. Providing guidance, education, and training; and
5. Investigating and responding to outbreaks in healthcare settings.

We welcome your feedback to improve the usefulness of future reports at nchai@dhhs.nc.gov.

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[1] Centers for Disease Control and Prevention. Healthcare Associated Infections (HAI) HAI Data Data Portal. Last reviewed October 2021. Available at https://www.cdc.gov/hai/data/portal/index.html

[2] Scott R. *The Direct Medical Costs of Healthcare-Associated Infections in U.S. Hospitals and the Benefits of Prevention. Internal Report.* Division of Healthcare Quality Promotion, National Center for Preparedness, Detection, and Control of Infectious Diseases, Coordinating Center for Infectious Diseases, Centers for Disease Control and Prevention; February 2009. Available at The Direct medical costs of healthcare-associated infections in U.S. hospitals and the benefits of prevention (cdc.gov)

[3] Anderson DJ, Pyatt DG, Weber DJ, Rutala WA; North Carolina Department of Public Health HAI Advisory Group. Statewide costs of health care-associated infections: Estimates for acute care hospitals in North Carolina. *Am J Infect Control.* 2013;41:764-8. doi: 10.1016/j.ajic.2012.11.022.

[4] APIC. APIC HAI Cost Calculator. Page created February 2022 Available at APIC HAI Cost Calculator | Agency for Healthcare Research and Quality (ahrq.gov) Accessed July 21, 2022.

Additional resources:

- HAIs and the NC SHARPPS Program
- Past HAI surveilance reports

Acknowledgements

We acknowledge the extensive time and effort that collective stakeholders across North Carolina put into infection prevention every day. We at NC DPH remain committed to our partners and dedicated to our common goal of patient safety.

The COVID-19 pandemic resulted in unprecedented challenges to the healthcare and public health infrastructure.The SHARPPS Program would like to thank and commend hospital infection preventionists across the state who worked tirelessly to protect the health and safety of both patients and staff in their institutions during the pandemic, all while continuing to perform their routine responsibilities including HAI surveillance. It is thanks to these dedicated individuals that the SHARPPS Program is able to present and analyze these HAI data for 2021 despite the impact of the pandemic. Hospital infection preventionists provided the data used to create this report and worked with their hospital colleagues to identify and reconcile any potential problems with the data. The recent progress and successes in fighting healthcare-associated infections would not have been possible without their continuing efforts, dedication and collaboration.

The SHARPPS Program would also like to recognize the contributions of the SHARPPS Advisory Group members listed in Appendix C. In particular, the Program is grateful for their ongoing guidance and feedback on the presentation and content of NC DPH HAI reports.

Finally, the Program would like to acknowledge our partners who have been important leaders and strong supporters of surveillance and prevention programs for healthcare-associated infections in North Carolina. These include the North Carolina Healthcare Association (NCHA), the North Carolina Statewide Program for Infection Control and Epidemiology (NC SPICE), the North Carolina Chapter of the Association for Professionals in Infection Control and Epidemiology (APIC), Alliant Quality, and the North Carolina Division of Health Service Regulation.

I. Highlights of Healthcare-Associated Infection Prevention Activities in 2021

A. NC Surveillance for Healthcare-Associated and Resistant Pathogens Patient Safety Program

Key accomplishments and activities of the North Carolina Surveillance for Healthcare-Associated and Resistant Pathogens Patient Safety (SHARPPS) Program in 2021 include the following:

- ***MDRO Investigation and Response:*** In 2021, the SHARPPS Program led or participated in 66 acute responses to multidrug-resistant organisms (MDROs) statewide, including outbreaks and sentinel events (a single event initiating response). Of these responses, 23 were outbreaks in various types of healthcare settings, both inpatient and outpatient.

- ***GAS and Legionellosis Investigation and Response:*** In 2021, the SHARPPS program led or participated in 12 acute responses for invasive Group A *Streptococcus* (GAS) in healthcare facilities and one outbreak investigation for Legionellosis. There were five invasive GAS outbreaks, all of which occurred in long-term care facilities.

- ***Program Infrastructure:*** Using federal supplemental funding, the SHARPPS team has expanded to a total of 8 staff, composed of infection preventionists, epidemiologists, an industrial hygienist, and a program manager. Excluding COVID-19 related activities, the SHARPPS team provided 12 educational sessions in 2021 focusing on infection prevention, antimicrobial stewardship, and investigation and control of antimicrobial-resistant pathogens including carbapenem-resistant Enterobacterales and *Candida auris*.

  Additionally, we collaborated with partners and local health departments to establish regional infection prevention teams to serve as force multipliers in the field. These Regional Infection Prevention Support (RIPS) Teams were established in August 2020 and are placed in each of North Carolina's 10 public health regions to provide on-site infection prevention and control assistance, training, and consultation to all types of long-term care facilities. Under the guidance of the Division of Public Health, these Teams use evidence-based infection control procedures consistent with applicable CDC, CMS and HHS guidance to bolster infection prevention knowledge and practices, mitigating and preventing health threats like COVID and all other infectious diseases, thereby reducing morbidity and mortality. To date, these teams have contacted over 3,900 long-term care facilities, completed over 3,500 on-site visits, and conducted over 1,200 in-depth infection control assessments.

- ***One and Only Safe Injection Practices Campaign****:* The One & Only Campaign webpage has been created that centralizes the campaign's suite of resources available to educate about the basics of injection safety. It features multi-media resources developed over the last 10 years that address injection safety and related topics such as insulin pens and drug diversion. The webpage also highlights campaign partners and members that have committed to amplifying injection safety messaging.

- ***Be Antibiotics Aware: Smart Use Best Care:*** The Be Antibiotics Aware: Smart Use, Best Care Campaign is CDC's national educational effort to improve antibiotic prescribing among healthcare providers, educate the public about appropriate use of antibiotics, and combat antibiotic resistance. In 2014, North Carolina became an active member of the Campaign, further promoting a goal of the NC Department of Health and Human Services "to advance the health and well-being of North Carolinians utilizing the programmatic tools of our Department."

- ***Antimicrobial Resistance:*** Antimicrobial resistance is an urgent public health threat and remains a priority for the SHARPPS Program. The SHARPPS Program collaborates with the NC State Laboratory of Public Health (NC SLPH), the Centers for Disease Control and Prevention (CDC) Antibiotic Resistance Laboratory Network (ARLN) and local health departments (LHDs) on carbapenem-resistant Enterobacterales (CRE) and *Candida auris* containment efforts. NC SLPH provides support for the identification of carbapenemase-producing CRE (CP-CRE) to facilities statewide. ARLN funding provides infrastructure and laboratory capacity to screen for CRE and *C.*

auris, and LHD staff provide onsite support for investigations. The SHARPPS Program has a toolkit for preventing the spread of MDROs in long-term care facilities.

Antimicrobial Stewardship: The STewardship of Antimicrobial Resources (STAR) Partners initiative launched July 2018. This tiered, recognition-based incentive program encourages antimicrobial stewardship program development and addresses activities related to antimicrobial resistance and surveillance. The initiative encourages facilities who attain the highest tier to partner as mentors to facilities with less advanced stewardship programs. So far, 21 acute care hospitals are enrolled – including two new facilities who joined during the COVID-19 pandemic. STAR Partners provides mentorship opportunities and educational offerings in addition to recognition through certificates and listing participating facilities on the NC SHARPPS website.

B. Healthcare-Associated Infections Partner Updates

North Carolina Statewide Program for Infection Control and Epidemiology (NC SPICE)

NC Statewide Program for Infection Control and Epidemiology (SPICE) promotes prevention and control of healthcare-associated infections in North Carolina by providing evidence-based education and consultation across the healthcare spectrum. Activities for 2021 are summarized below.

Classroom Courses:

- In 2021, SPICE offered infection control courses targeting new infection preventionists (IPs) via classroom and/or virtual, live-streamed webinars, training 850 healthcare professionals on infection control in various healthcare settings.

.0206 NC Curriculum for Infection Control:

- 1,799 outpatient, dental and home health hospice health care professionals completed the .0206 NC Infection Control Curriculum online.
- 1,417 outpatient, dental, home health/hospice, and dialysis health care professionals completed the .0206 NC Infection Control Curriculum in a classroom/webinar setting.

Enhanced Education of Infection Prevention in Nursing Homes:

- Free online modules covering antibiotic-resistant bacteria, isolation precautions, injection safety, environmental cleaning, *Clostridioides difficile*, and urinary tract infections (UTIs) were offered through Coursera. 1,113 learners completed the course in 2021.

Phone and Email Consultations:

- SPICE provided 2,569 infection control consultations by phone or email in 2021.

Special Projects:

- With NC DHHS contract funding, NC SPICE:
  - Continued to employ three part-time and two full-time infection prevention specialists
  - Served as a "force multiplier" providing consultation, outbreak response, and development of infection control guidance
  - Developed a set of template policies and procedures for adult care homes
  - Began planning and development of 26 distinct educational resources/programs scheduled for completion in 2022 including:

    - **Toolkits**
      - Resource Toolkit for Local Health Departments
      - Training, Competency, Monitoring and Feedback Toolkit
      - Toolkit for Establishing Successful Hand Hygiene and PPE Programs
      - Infection Prevention New Employee Orientation Toolkit
      - HICPAC 1 Toolkit: Leadership, Education for Staff and Patients, and Performance
      - HICPAC 2 Toolkit: Injection and Medication Safety

- HICPAC 3 Toolkit: Environmental Cleaning and Disinfection

- **Educational Videos:**
  - Standard Precautions: What to Remember
  - What to Look for: Conducting Environmental Rounds
  - Employee Health: Why is it Important for Infection Prevention?
  - Implementing a Respiratory Protection Program
  - Donning and Doffing PPE
  - Implementing a Respiratory Protection Program
  - N95 Fit Testing
  - How to Conduct Environmental Rounds in an Outpatient Setting
  - Environmental Cleaning in a Long-Term Care Facility
  - Six (6) Just-In-Time videos (each is 9 minutes or less in length)
    - Assisted Blood Glucose Monitoring: Key Points to Remember
    - Employee Work Restrictions: When to Stay Home
    - Environmental Cleaning: Key Points to Remember
    - Safe Injection Practices
    - Storage of Patient Care Equipment and Supplies
    - Standard Precautions: Key Points to Remember
- **Courses with continuing education credit**
  - High Level Disinfection and Sterilization for the Infection Preventionist
  - Infection Prevention in Adult Care Homes
  - Infection Prevention in Nursing Homes, update of six modules

In-Services/Presentations by Evelyn Cook and Infection Prevention Consultants:

- April 4, 2021: Environmental Rounds with NCDHHS Regional Prevention Support Teams, N=37 participants
- May 15, 2021: Legionella Training Session with NCDHHS Regional Prevention Support Teams, N=27
- June 9, 2021: General Q&A Session with NCDHHS Regional Prevention Support Teams, N=29
- June 23, 2021: Group A *Streptococcus* Training Session with NCDHHS Local Health Departments, N=97
- May 20, 2021: Antibiotic Stewardship Long-term Care Training, N=122
- June 14, 2021: OSHA Emergency Temporary Standard Webinar, N=531
- July 22, 2021: OSHA Emergency Temporary Standard National APIC Webinar, N=1,000
- August 10, 2021: OSHA Emergency Temporary Standard presentation with the Senior Living Association, N=20
- August 19, 2021: Long-term Care Construction and Renovation Webinar, N=44
- September 10 and September 20, 2021: CDC Update Webinar with NC DHSR, N=500
- September 10 and September 20, 2021: CDC Update Webinar with facility IPs, N=541
- September 22, 2021: OSHA Emergency Temporary Standard Webinar, N=61
- September 23, 2021: APIC NC Fall Conference “Before and After: Determining the Impact of SARS CoV-2 on Long-Term Care Facilities” N=100
- September 24, 2021: NCNA Annual Conference: "Multidrug Resistant Organisms (MDROs)"
- November 10, 2021: Infection Control and Prevention of Seasonal Influenza in Long-Term and Congregate Care Settings Training
- November 10, 2021: NCNA SARS-CoV-2 (COVID-19) Webinar “The Pandemic of 2020: On a Collison Course with U.S. Healthcare”
- December 20, 2021: NCNA Podcast: “Project Firstline and Infection Control”

Alliant Quality, The Quality Innovation Network – Quality Improvement Organization (QIN-QIO) for North Carolina

Alliant Health Solutions serves as the QIN-QIO for North Carolina. As reported for 2021, Alliant tools, resources, and educational opportunities are offered to nursing homes for infection prevention activities to include enrollment and reporting information into CDC's National Healthcare Safety Network (NHSN). Monthly SHOP Talk calls continue with additional information posted on the Alliant Health Solutions website. Additionally, SHOP Talk SHORTs have been developed as quick references to guide Providers through NHSN processes. All sessions are recorded and posted along with the presentations to allow Providers access to information that can be used for their education and sharing as they make additions or deletions to their users for NHSN. Targeted Response Quality Improvement Initiative (TRQII) has been added for long-term care facilities that have experienced an increased number of COVID-19 cases. Also, Vaccine Quality Improvement Initiative (VQII) assists long-term care facilities with strategies to improve their vaccination booster rates for their residents and staff. Alliant Team members provide one-on-one technical assistance with proven quality improvement tools to include Root Cause Analysis (RCA) and Plan, Do, Study, Act (PDSA). All of the tools and resources developed are readily available for use by visiting the Alliant Health Solutions website.

I. Healthcare-Associated Infections Data

The SHARPPS HAI Annual Report for 2021 includes data that have been combined from all reporting acute care hospitals in North Carolina. Other types of facilities also report HAI data to North Carolina, including long-term acute care facilities, inpatient rehabilitation facilities, critical access hospitals, and specialty hospitals such as psychiatric facilities. While not reflected in this Annual Report, data for these additional facility types are provided in the Quarterly Reports.

A. WHAT IS THE PURPOSE OF THIS REPORT?

This report is provided to help patients who need inpatient medical treatment decide whether they should be concerned about healthcare-associated infections (HAIs) at the hospital they may choose. HAIs are infections patients can get while receiving medical treatment in a healthcare facility. Patients should know that these infections are unintended. Ideally, HAIs should never happen, but sometimes they do. Hospitals track and report HAIs for many reasons. In some cases, they are required to do so—either by state public health authorities or by federal health agencies. In most cases, hospitals report numbers (data) about certain HAIs because they want to know how well they are doing in preventing them, and how they compare with other hospitals of similar size and with similar kinds of patients.

This report looks at five HAIs:

1. Central line-associated bloodstream infections (CLABSI)
2. Catheter-associated urinary tract infections (CAUTI)
3. Surgical site infections (SSI) following abdominal hysterectomies and colon surgeries
4. Positive laboratory results with methicillin-resistant *Staphylococcus aureus* (MRSA) bacteria found in the bloodstream
5. Positive laboratory results with *Clostridioides difficile* (*C. difficile,* CDI) bacteria found in a stool (fecal) sample

Click here for "Fast Facts" about central lines, urinary catheters, and the HAIs discussed in this report.

Hospitals are required by law to report occurrences of five HAIs to the North Carolina Division of Public Health. These measures do not represent all possible infections but were selected because they give a good overview of how a hospital or state is doing in preventing healthcare-associated infections. These infections are largely preventable when healthcare providers use infection prevention steps recommended by the Centers for Disease Control and Prevention (CDC).

B. WHERE DO THE NUMBERS COME FROM?

Hospitals self-report their HAI data to the CDC and the NC DPH using a free, web-based software system called the National Healthcare Safety Network (NHSN). The CDC and the NC SHARPPS Program provide training to hospital staff on the appropriate use of this system and provide guidance on how to track infections in a standard way.

C. HOW DO I READ THE REPORT?

This report looks at how hospitals in North Carolina performed in terms of infection prevention by displaying how many HAIs they reported from January 1, 2021 through December 31, 2021. These infection counts alone do not show how well a facility or North Carolina is doing in preventing HAIs. Therefore, the report also presents a key measure used to determine HAI progress, the standardized infection ratio (SIR). **The SIR is the number used to represent how well a facility did in preventing HAIs compared to similar facilities using the national average (i.e., national experience).** When presenting SIRs, the report data tables and figures show whether North Carolina, a hospital-sized group, or location type had more HAIs ("worse"), fewer HAIs ("better"), or about the same number of HAIs ("same") compared to the national average based on previous years of reported data. The predicted value of the national average for each HAI is also called the "NHSN baseline." The SIR is considered a "best guess" or estimate of observed infections compared to the number of infections that would be predicted based on the NHSN baseline. The comparison made by the SIR between observed and predicted infections takes into account differences between hospitals such as types of patients and procedures, as well as other factors such as the hospital's size and whether it is affiliated with a medical school. More information on how the SIR is calculated can be found here.

SIRs are presented for the state overall and for each hospital size group; for some HAIs, SIR is also presented by location type (i.e., adult/pediatric units vs. neonatal locations). The hospital size groups were categorized by total hospital bed counts: less than 100 beds, 100-199 beds, 200-399 beds, and 400+ beds. Hospitals that served as the primary location for medical schools were included in a separate category (primary medical school affiliation). A list of the reporting hospitals in each size category can be found in Appendix D.

In 2015, NHSN updated the national baseline for all HAIs. The original national experience (NSHN baseline) was used in SHARPPS Program reports from 2012-2016. When calculating the SIR based on the original baseline, the way differences in facilities (such as types of patients and procedures, or facility size) were accounted for varied by both HAI type and facility type. Starting in 2017, NC SHARPPS began presenting SIRs calculated on the new NHSN baseline. All HAIs use data from 2015 to come up with their predicted baseline values and the 2015 baseline serves as the reference point for assessing progress. SIRs calculated under this baseline cannot be compared to SIRs calculated using the original baselines.

Click here for a "Reading Guide" that explains each element of the data tables and figures.

a. WHAT DO THE NUMBERS MEAN?

This report shows how the state performed during a single year (2021) and compares each hospital's performance to the national average or baseline experience.

In addition to presenting numbers, there are some more complicated calculations performed on the data. These calculations help ensure that any data guesses or estimates (i.e., for the SIR) are as accurate as possible. A larger number of data records will provide more accurate estimates than a smaller number. One of these calculations, the 95% confidence interval, gives a lower and higher range of values that we use when comparing the number of observed infections to the number of predicted infections; this range tells us if the difference between the observed and predicted infections is statistically significant.

Click here for a "Numbers Guide" that explains any calculations for numbers in the data tables and figures.

b. ORGANISMS IDENTIFIED FROM HAIs

In NHSN, hospitals may report up to three organisms identified from one HAI. These organisms were categorized into 10 groups: *Candida* spp. & other yeasts/fungi, *Enterobacter* spp., *Enterococcus* spp., *Escherichia coli* (*E. coli*), *Klebsiella* spp., *Pseudomonas* spp., *Staphylococcus aureus*, coagulase-negative *Staphylococci*, and two "other" categories – other gram-positive bacteria and other gram-negative bacteria. The first eight categories or organisms listed represent the national leading causes of HAIs. Many of these organisms are part of the normal flora contained within the human body, found on the skin or in the gastrointestinal and/or urinary tract. Introduction of these organisms into other areas of the body can lead to infection.

Excluded organisms: Some organisms are rarely associated with HAIs or not known to cause HAIs. These organisms may be the causes of community-associated infections. For this reason, NHSN excludes organisms from the following genera from reporting: *Blastomyces, Histoplasma, Coccidioides, Paracoccidioides, Cryptococcus*, and *Pneumocystis*. Additional HAI-specific organism exclusions can be found in the NHSN Patient Safety Manual.

c. THINGS TO CONSIDER WHEN LOOKING AT THE REPORT

120 North Carolina hospitals reported HAIs in 2021, including 94 short-term acute-care hospitals, seven long-term acute-care hospitals, seven inpatient rehabilitation facilities, and 12 specialty hospitals. This report includes data from the 94 short-term acute-care hospitals. Facility-specific data for all types of facilities can be found in the Quarterly Reports.

These reports cover data from January 1, 2021 through December 31, 2021. Data were downloaded from the National Healthcare Safety Network (NHSN) on June 2, 2022; any changes made to the data after this date are not reflected in this report. Before reviewing this report, a few clarifications about the data need to be made:

1. **The data within this report are preliminary.** Although efforts were made by hospitals and the North Carolina SHARPPS Program to ensure that the data were accurate and complete, the data are self-reported and have not been formally "double-checked," or validated. Until additional data validation is completed, numbers should be interpreted with caution.

2. **There may be differences in reporting practices among hospitals.** Hospitals with more infection control personnel and resources may be able to identify and report more infections compared to a hospital with fewer infection control resources.

3. **There may be differences between results published by the North Carolina SHARPPS Program and results published elsewhere** (e.g., Centers for Medicare and Medicaid Services Hospital Compare website). Results may differ due to using data from different time periods, different facility types, different patient populations, and/or different methods of analysis.

4. **The North Carolina SHARPPS Program chose not to present some data** for individual hospital units, procedures or hospitals that did not meet a threshold (minimum value) for the reporting period. The minimum threshold numbers are based on CDC recommendations for reporting healthcare-associated infection data.

5. **The North Carolina SHARPPS Program does not calculate an SIR when the number of predicted infections is less than one**. In these situations, the "How Does the State Compare to the National Experience" text says, "No conclusion." This does not mean that hospitals failed to report data; it only means that the number of patients, devices (central lines or urinary catheters), and/or procedures that were seen during this time period did not meet the

established threshold for calculating an SIR. In other words, there is not enough information to make a reliable conclusion about performance on this measure.

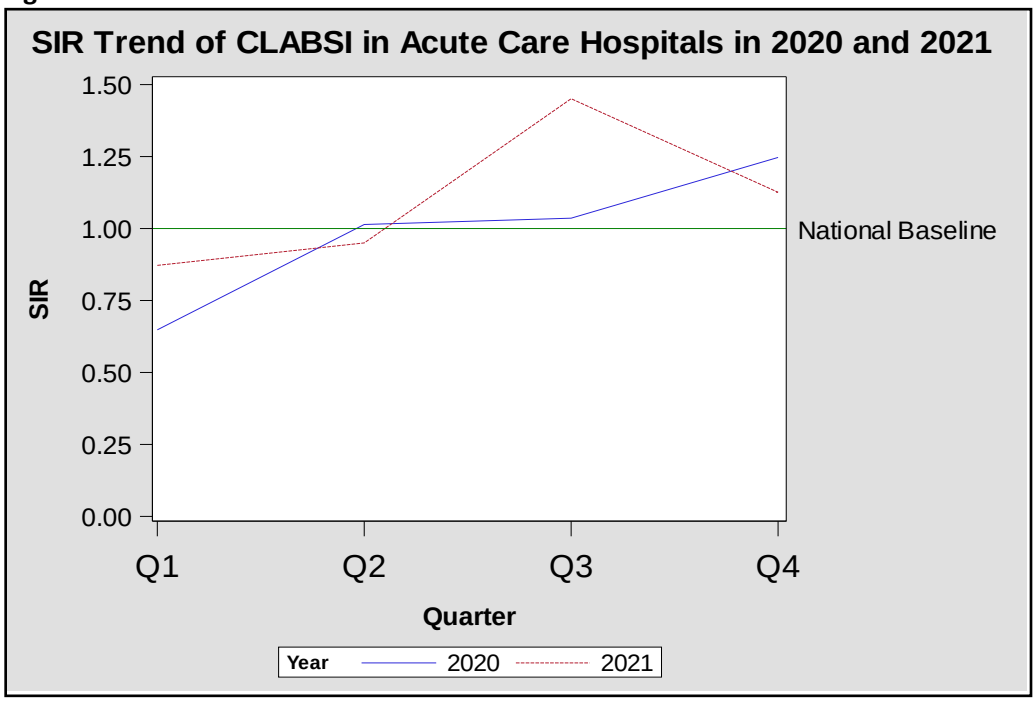
6. **Laboratory-Identified Events (LabID Events):** *Clostridioides difficile* infections (CDI) and methicillin-resistant *Staphylococcus aureus* (MRSA) bacteremia (blood infection) LabID events rely on laboratory data. Patients did not have to be ill to have a positive result, and a positive result can be determined without requiring clinical information about the patient. This allows for a much less labor-intensive means to track CDI and MRSA infections. Only those LabID events that are acquired in the hospital are displayed in this report. The sensitivity of various testing methodologies may vary, particularly for CDI. NHSN makes risk adjustments to account for these differences when calculating SIRs for LabID CDI events.

As of 2018 Q1, CDI events will be risk adjusted for the last test performed if multiple tests were used. For example, if 'NAAT plus EIA, if NAAT positive' was performed, the event will be risk adjusted for EIA. More information can be found in the NHSN SIR Guide.

D. HEALTHCARE-ASSOCIATED INFECTIONS TRENDS FOR 2020 AND 2021

North Carolina facilities strive to bring the SIR down to below the national baseline and this effort is reflected in the data. See below for how the SIR tracks across the year for 2020 and 2021.

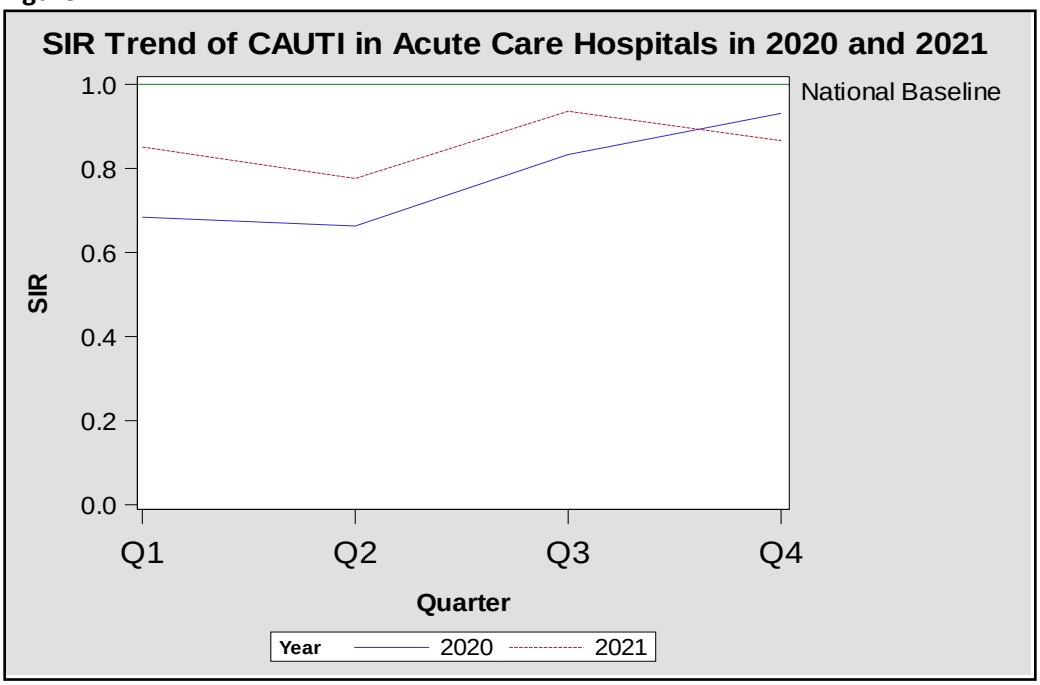
Figure 1.



Interpreting Figure 1:

- The majority of 2021 (Q1,Q2,Q4) and 2020Q2-Q3 experienced the same number of CLABSIs as predicted, performing the SAME as the national experience
- 2020Q1 experienced fewer CLABSIs than predicted, performing BETTER than the national experience
- 2020Q4 and 2021Q3 experienced more CLABSIs than predicted, performing WORSE than the national experience

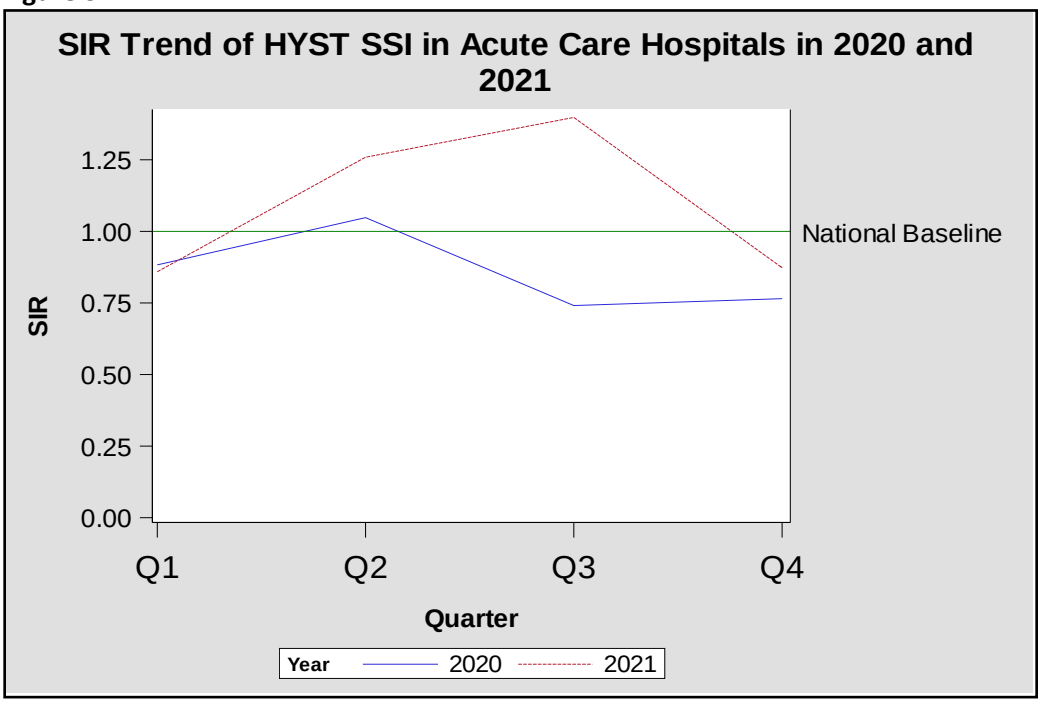
Figure 2.



Interpreting Figure 2:

- 2020Q1-Q3 and 2021Q1-Q2 experienced fewer CAUTIs than predicted, performing BETTER than the national experience
- 2020Q4 and 2021Q3-Q4 experienced the same number of CAUTIs as predicted, performing the SAME as the national experience

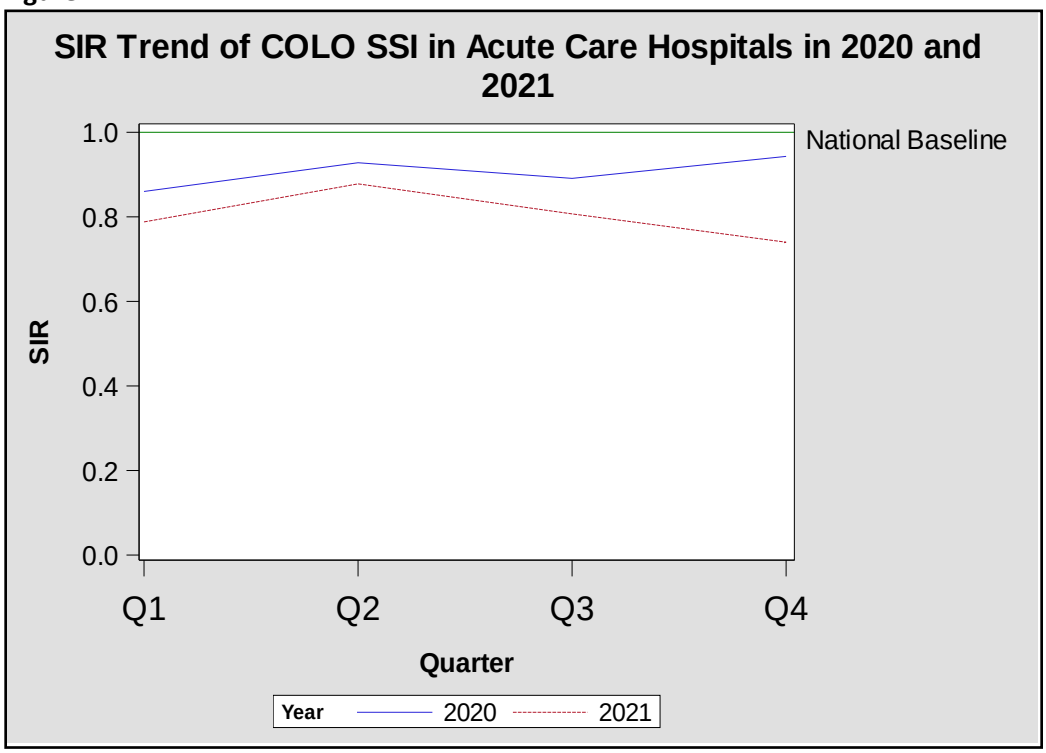
Figure 3.



Interpreting Figure 3:

- All quarters experienced the same number of HYST SSIs as predicted, performing the same as the national experience.

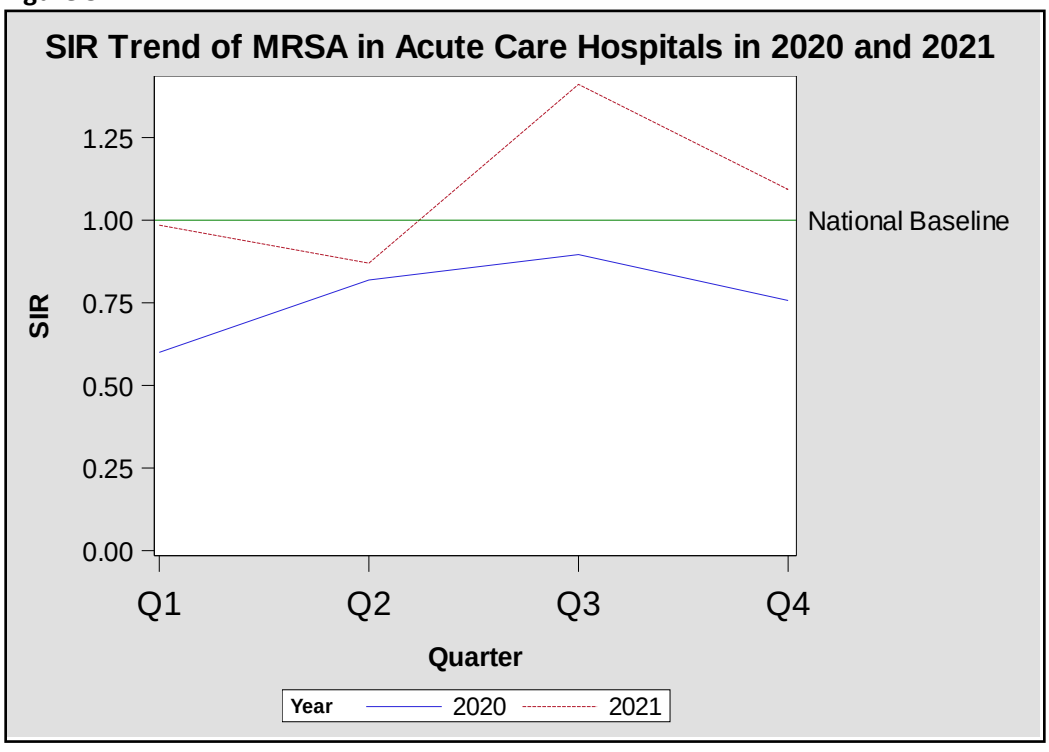
Figure 4.



Interpreting Figure 4:

- All quarters except 2021Q4 experienced the same number of SSIs associated with a COLO procedure as predicted, performing the SAME as the national experience
- 2021Q4 experienced fewer SSIs associated with a COLO procedure than predicted, performing BETTER than the national experience

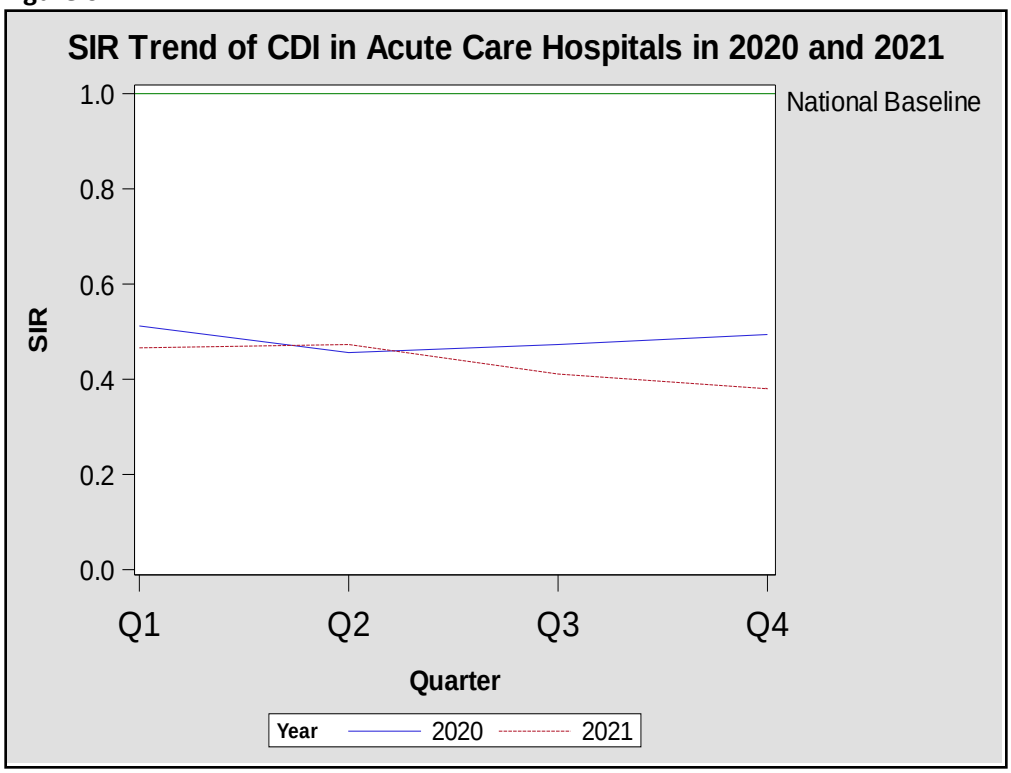
Figure 5.



Interpreting Figure 5:

- 2020Q1 and 2020Q4 experienced fewer MRSA LabID Events than predicted, performing BETTER than the national experience
- 2021Q1-Q2 and 2020Q4 experienced the same number of MRSA LabID Events as predicted, performing the SAME as the national experience
- 2021Q3 experienced more MRSA LabID Events than predicted, performing WORSE than the national experience

Figure 6.



Interpreting Figure 6:

- All quarters had fewer CDI LabID events than predicted, performing BETTER than the national experience

II. Statewide Healthcare-Associated Infections

A. Central Line-Associated Bloodstream Infections (CLABSI)

1. CLABSI in Adult/Pediatric ICUs and Wards

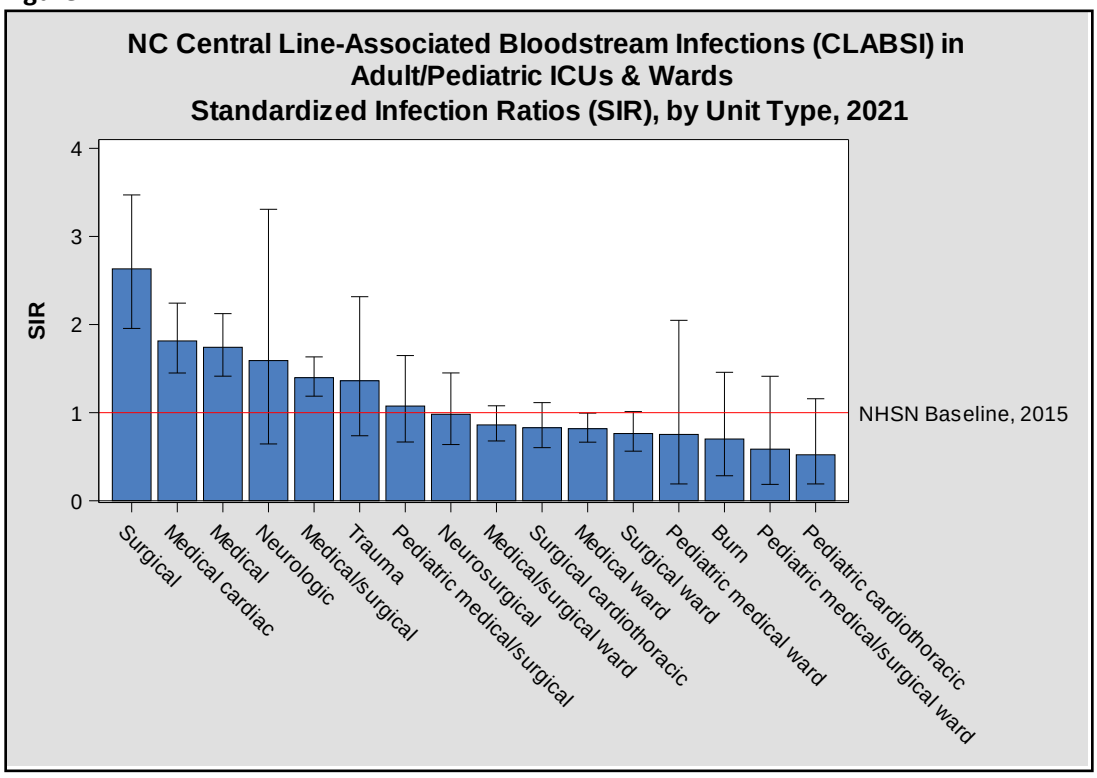
North Carolina 2021 CLABSI Highlights in Adult/Pediatric Medical, Surgical, and Medical/Surgical Wards & ICUs

- North Carolina hospitals reported 706 infections, compared to the 616.34 infections predicted by the national experience; this was worse than the 2015 national experience.
- The most commonly identified organisms from adult and pediatric CLABSI patients were *Candida* and other yeasts/fungi, followed by coagulase-negative *Staphylococcus*.

Table 1. NC Central Line Associated Bloodstream Infections (CLABSI) in Adult/Pediatric Medical, Surgical and Medical/Surgical Wards & ICUs, 2021

Year	# Observed Infections	# Predicted Infections	How Does North Carolina Compare to the National Experience?
2021	706	616.34	✖ WORSE: more than the number of infections predicted (worse than the national experience)

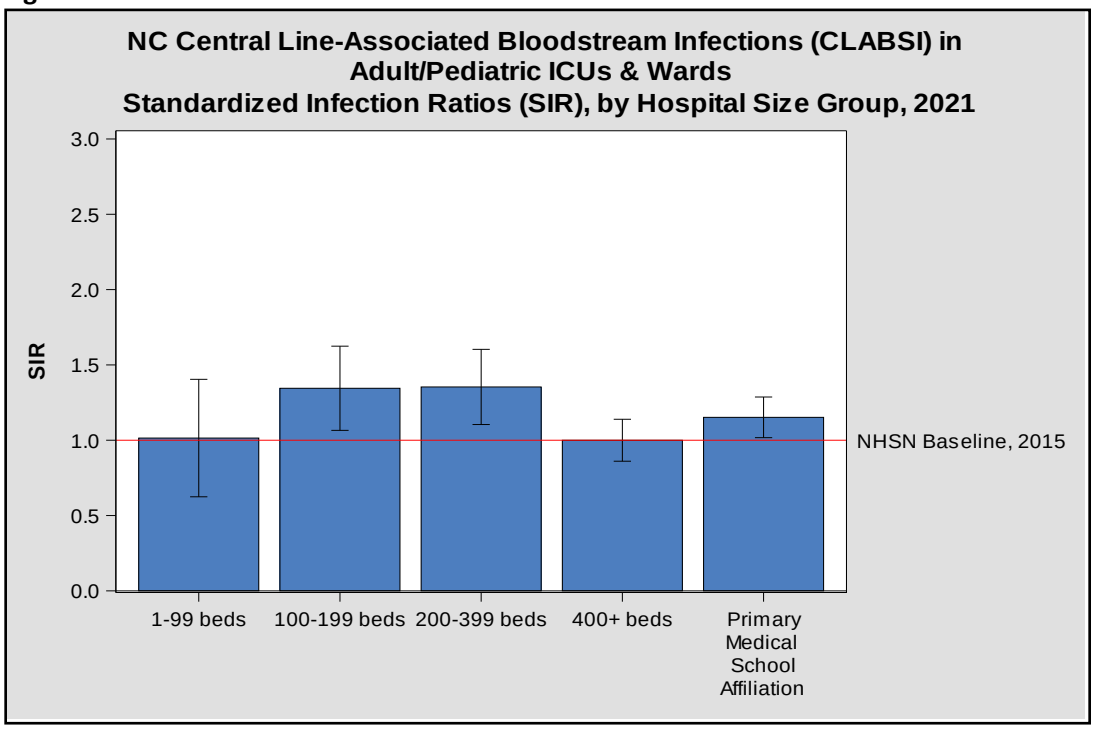
Figure 7.



Interpreting Figure 7:

- In 2021, medical wards reported fewer infections than predicted, performing BETTER than the national experience
- Surgical, medical cardiac, medical, and medical/surgical ICUs reported more infections than predicted, performing WORSE than the national experience
- All other unit types performed the SAME as the national experience

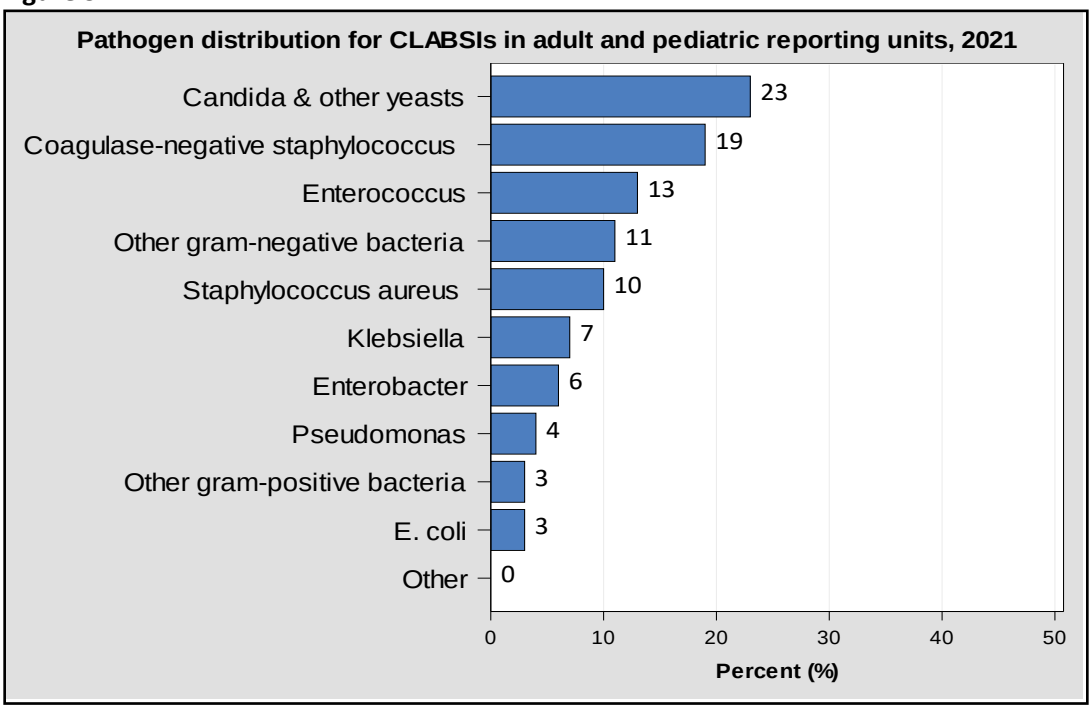
Figure 8.



Interpreting Figure 8:

- In 2021, hospitals with 100-199 beds, 200-399 beds, and medical school-affiliated hospitals had more CLABSIs than predicted, performing WORSE than the national experience
- All other hospitals observed about the same number of CLABSIs as predicted, performing the SAME as the national experience

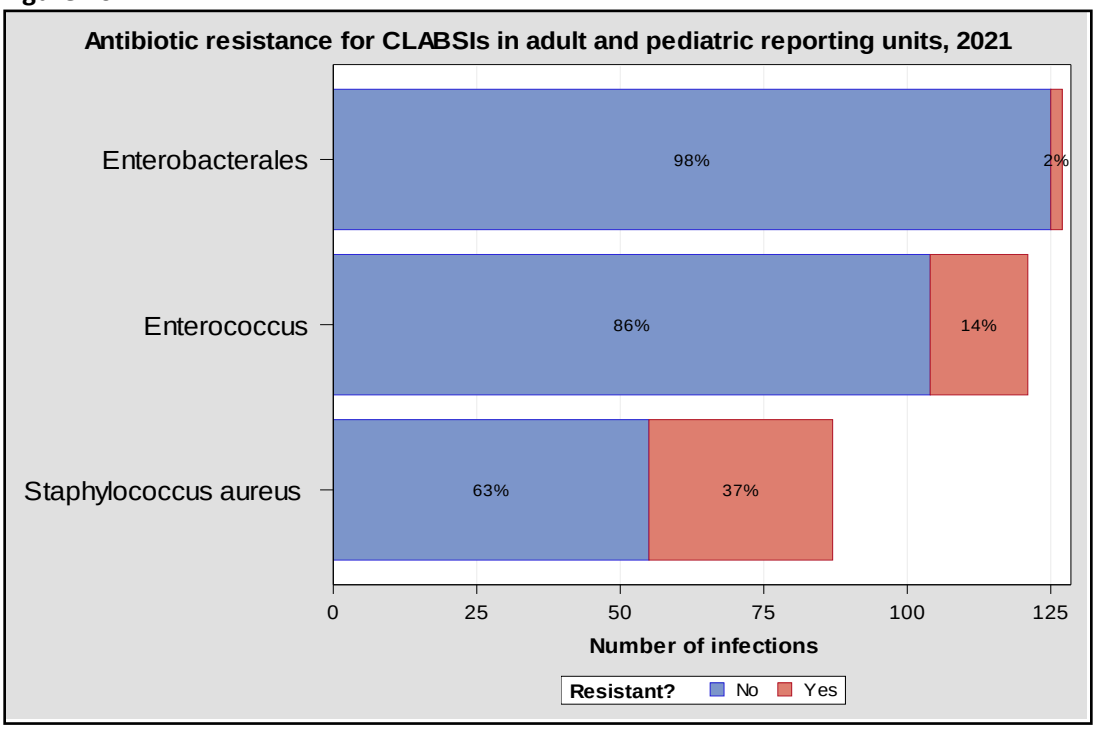
Figure 9.



Interpreting Figure 9:

- In 2021, The most commonly identified organisms from adult and pediatric CLABSI patients were *Candida* spp. and other yeasts/fungi (23%) followed by coagulase-negative *Staphylococcus* (19%)

Figure 10.



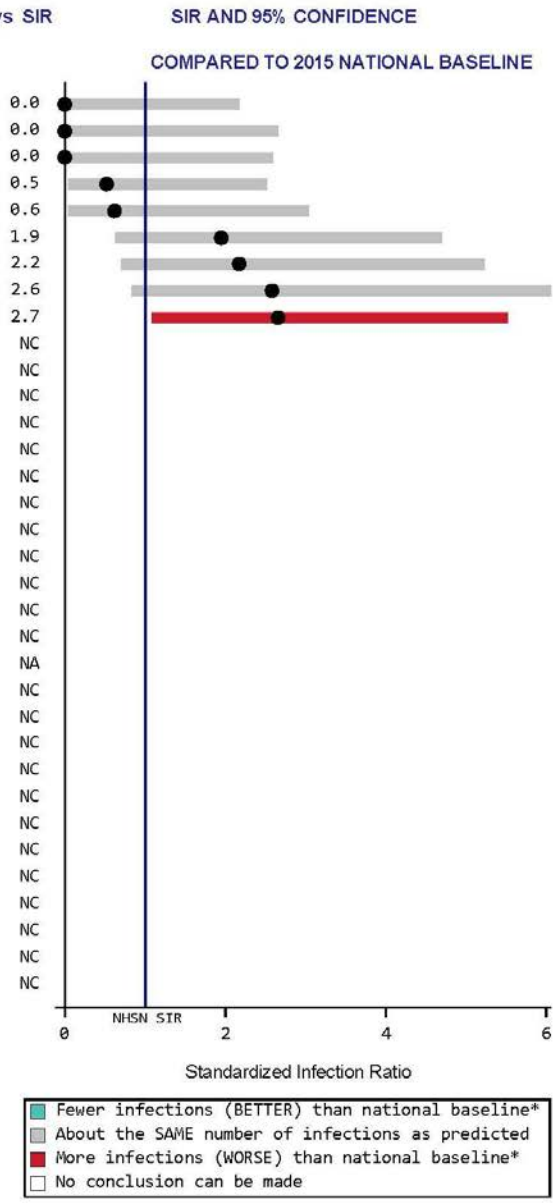
Interpreting Figure 10:

- In 2021, 37% of *Staphylococcus aureus* identified among adult/pediatric CLABSIs were resistant to methicillin.
- 14% of *Enterococcus* identified among adult/pediatric CLABSIs were resistant to vancomycin.
- The percentage of *Enterobacterales* identified among adult/pediatric CLABSIs resistant to carbapenems is low (2%).

The following SIR plots summarize CLABSI infection data among Adult/Pediatric locations for North Carolina hospitals by hospital groups (Appendix D).

Central Line-Associated Bloodstream Infections (CLABSI) in Adult & Pediatric ICUs and Wards
Standardized Infection Ratios: January 1 – December 31, 2021
Hospital Group: Hospitals with less than 100 Beds

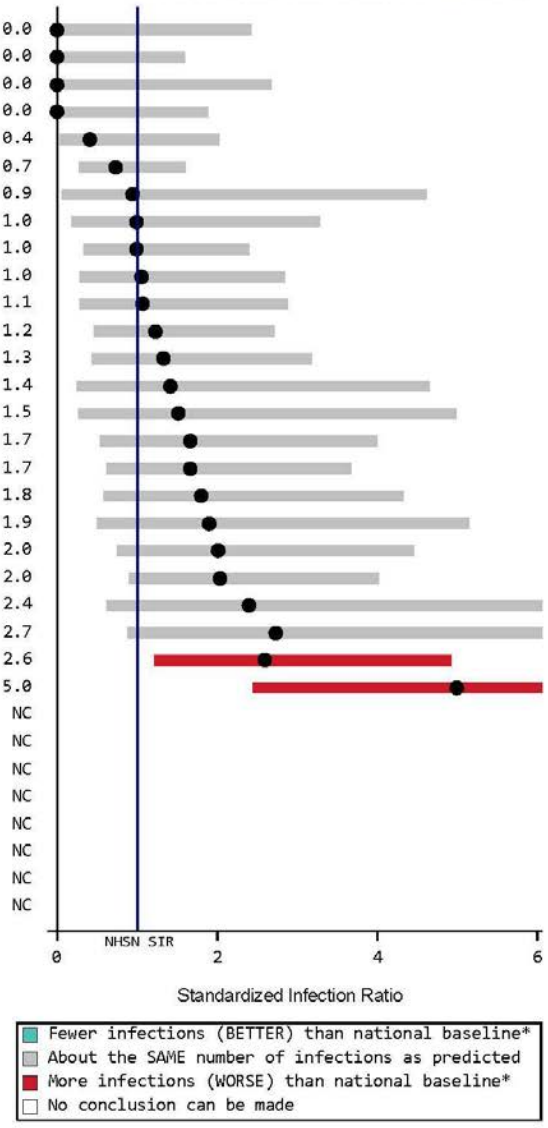
HOSPITAL INTERVAL	OBS	PRED	CLdays	SIR
Central Carolina Hospital	0	1.4	2230	0.0
Hugh Chatham Memorial Hospital	0	1.1	1818	0.0
Central Harnett Hospital	0	1.2	1577	0.0
Maria Parham Medical Center	1	2.0	2750	0.5
Duke LifePoint-Harris Regional Hospital	1	1.6	2601	0.6
Halifax Regional Medical Center	4	2.1	3045	1.9
Columbus Regional Healthcare System	4	1.8	2952	2.2
Wake Forest Baptist Health-Lexington	4	1.5	1918	2.6
Betsy Johnson Hospital	6	2.3	3155	2.7
McDowell Hospital	1	0.3	490	NC
Cherokee Indian Hospital	0	0.4	739	NC
Davis Regional Medical Center	0	0.4	702	NC
Martin General Hospital	0	0.4	641	NC
Randolph Hospital Dba Randolph Health	4	0.9	1552	NC
Vidant Beaufort Hospital	0	0.9	1446	NC
Granville Medical Center	0	0.8	1216	NC
Carteret General Hospital	0	0.6	956	NC
Vidant Duplin Hospital	0	0.8	1123	NC
Kings Mountain Hospital	0	0.1	140	NC
Person Memorial Hospital	0	0.3	470	NC
Novant Health Medical Park Hospital	0	0.2	303	NC
Atrium Health Anson	NA	NA	N	NA
Annie Penn Hospital	0	0.8	1339	NC
North Carolina Specialty Hospital	0	0.0	70	NC
Wake Forest Baptist Health-Davie Medical	0	0.5	798	NC
Johnston Health Clayton	0	0.4	534	NC
Firsthealth Moore Regional-Hoke	0	0.1	94	NC
Firsthealth Moore Regional-Richmond	0	0.6	915	NC
Cape Fear Valley Hoke Hospital	0	0.3	536	NC
Novant Health Kernersville	0	0.8	1018	NC
WakeMed North Family Health & Women's	1	0.1	152	NC
Novant Health Clemmons Medical Center	0	0.2	325	NC
Novant Health Mint Hill Medical Center	0	0.7	1119	NC
Rex Holly Springs Hospital	0	0.0	51	NC



Data reported as of June 2, 2022.
OBS = # infections observed
PRED = # infections statistically predicted by national baseline
CLdays = # Central Line Days
SIR = Standardized infection ratio (OBS/PRED # of infections)
NA = Data not shown for hospitals with <50 central line days
N = <50 central line days reported
NC = SIR not calculated for hospitals with <1 predicted infection
*Significantly different than 2015 national baseline

Central Line-Associated Bloodstream Infections (CLABSI) in Adult & Pediatric ICUs and Wards
Standardized Infection Ratios: January 1 – December 31, 2021
Hospital Group: Hospitals with 100 to 199 Beds

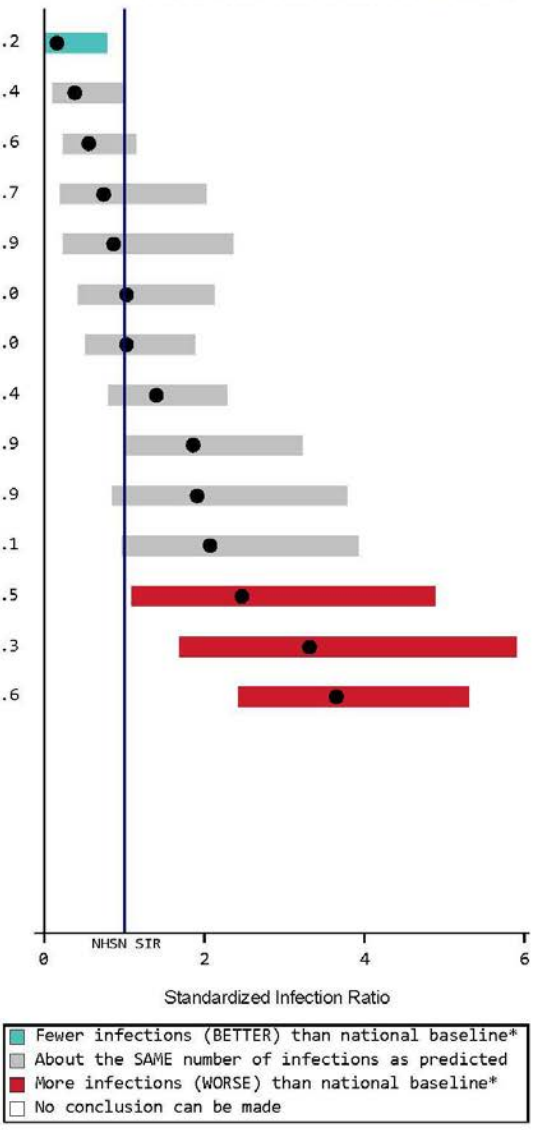
HOSPITAL INTERVAL	OBS	PRED	CLdays	SIR
Rutherford Regional Medical Center	0	1.2	1790	0.0
Haywood Regional Medical Center	0	1.9	2040	0.0
Northern Regional Hospital	0	1.1	1577	0.0
Novant Health Brunswick Medical Center	0	1.6	1774	0.0
UNC Health Blue Ridge	1	2.4	2659	0.4
Duke Raleigh Hospital	5	6.9	7830	0.7
Atrium Health Stanly	1	1.1	1504	0.9
Wesley Long Hospital	2	2.0	2768	1.0
Caldwell Memorial Hospital	4	4.0	5822	1.0
Novant Health Huntersville	3	2.9	3264	1.0
Vidant Edgecombe Hospital	3	2.8	3092	1.1
Johnston Health	5	4.1	5022	1.2
Atrium Health Union	4	3.0	4289	1.3
Vidant Roanoke Chowan Hospital	2	1.4	1561	1.4
Atrium Health Lincoln	2	1.3	1918	1.5
Lenoir Memorial Hospital	4	2.4	3529	1.7
Nash Health Care Systems	5	3.0	4255	1.7
Sentara Albemarle Medical Center	4	2.2	2342	1.8
Onslow Memorial Hospital	3	1.6	2105	1.9
Pardee Hospital	5	2.5	3047	2.0
Iredell Memorial Hospital	7	3.4	4832	2.0
Lake Norman Regional Medical Center	3	1.3	1790	2.4
Wake Forest Baptist Health-Wilkes	4	1.5	2067	2.7
Frye Regional Medical Center	8	3.1	4286	2.6
Atrium Health University City	9	1.8	2168	5.0
Advent Health Hendersonville	1	0.8	1170	NC
ARHS-Watauga Medical Center	0	0.7	774	NC
Novant Health Thomasville Medical Center	0	0.8	919	NC
Sampson Regional Medical Center	0	0.5	586	NC
Scotland Memorial Hospital	2	0.8	1112	NC
Wilson Medical Center	1	0.8	1195	NC
UNC Rockingham Health	1	0.9	1426	NC
Cone Green Valley	0	0.2	323	NC



Data reported as of June 2, 2022.
OBS = # infections observed
PRED = # infections statistically predicted by national baseline
CLdays = # Central Line Days
SIR = Standardized infection ratio (OBS/PRED # of infections)
NA = Data not shown for hospitals with <50 central line days
N = <50 central line days reported
NC = SIR not calculated for hospitals with <1 predicted infection
*Significantly different than 2015 national baseline

Central Line-Associated Bloodstream Infections (CLABSI) in Adult & Pediatric ICUs and Wards
Standardized Infection Ratios: January 1 – December 31, 2021
Hospital Group: Hospitals with 200 to 399 Beds

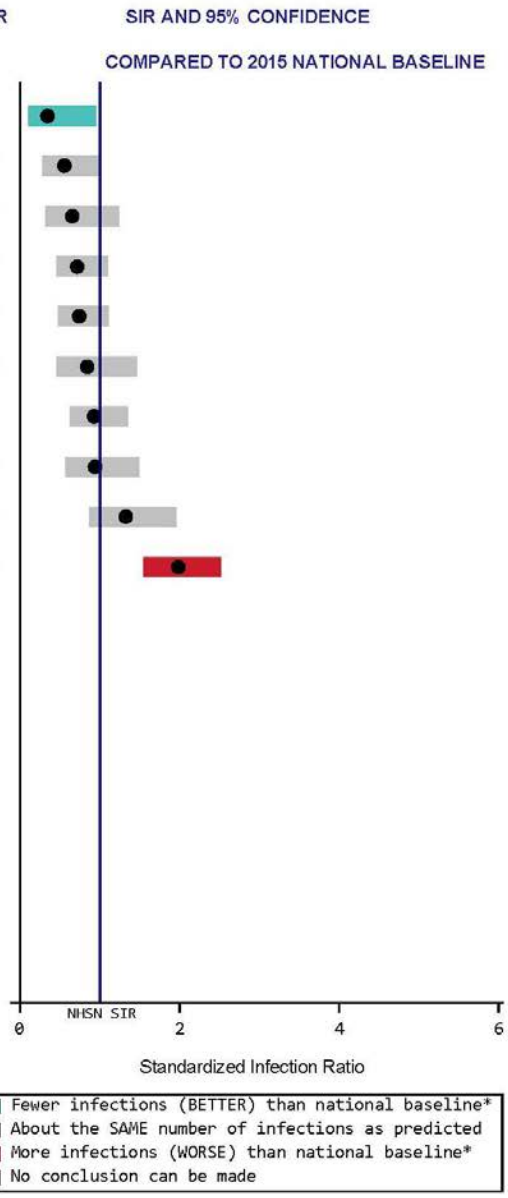
HOSPITAL INTERVAL	OBS	PRED	CLdays	SIR
CarolinaEast Medical Center	1	6.3	7891	0.2
Wayne Memorial Hospital	3	8.0	8587	0.4
Duke Regional Hospital	6	10.9	10497	0.6
Alamance Regional Medical Center	3	4.0	3799	0.7
Novant Health Matthews Medical Center	3	3.5	4878	0.9
Catawba Valley Medical Center	6	5.9	7241	1.0
FirstHealth Moore Regional Hospital	9	8.8	11045	1.0
High Point Regional Health System	14	10.0	9765	1.4
Atrium Health Pineville	11	5.9	6334	1.9
Atrium Health Mercy	7	3.7	4505	1.9
Atrium Health Cleveland	8	3.9	4710	2.1
Novant Health Rowan Medical Center	7	2.8	3544	2.5
WakeMed Cary Hospital	10	3.0	4379	3.3
Southeastern Regional Medical Center	25	6.9	8531	3.6



Data reported as of June 2, 2022.
OBS = # infections observed
PRED = # infections statistically predicted by national baseline
CLdays = # Central Line Days
SIR = Standardized infection ratio (OBS/PRED # of infections)
NA = Data not shown for hospitals with <50 central line days
N = <50 central line days reported
NC = SIR not calculated for hospitals with <1 predicted infection
*Significantly different than 2015 national baseline

Central Line-Associated Bloodstream Infections (CLABSI) in Adult & Pediatric ICUs and Wards
Standardized Infection Ratios: January 1 – December 31, 2021
Hospital Group: Hospitals with 400 or More Beds

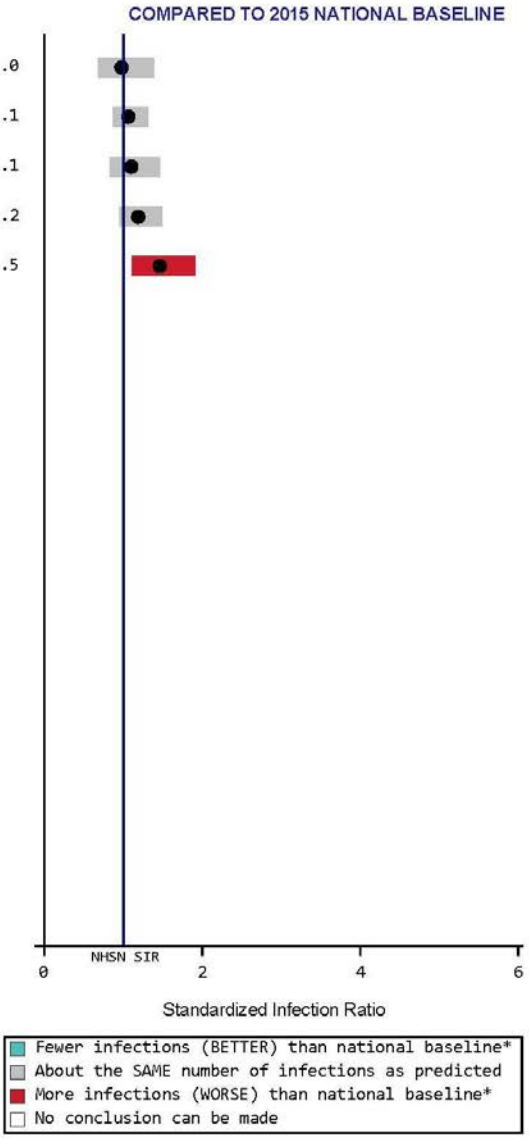
HOSPITAL INTERVAL	OBS	PRED	CLdays	SIR
Gaston Memorial Hospital	3	8.6	10547	0.3
Moses Cone Hospital	9	16.2	15034	0.6
Novant Health Presbyterian Medical	8	12.2	11240	0.7
Rex Healthcare	19	26.4	25421	0.7
Novant Health Forsyth Medical Center	21	28.5	26467	0.7
Atrium Health Cabarrus	11	13.0	13925	0.8
Mission Hospital	25	26.9	25371	0.9
Cape Fear Valley Health System	16	17.0	15794	0.9
WakeMed	23	17.4	15673	1.3
New Hanover Regional Medical Center	63	31.8	30468	2.0



Data reported as of June 2, 2022.
OBS = # infections observed
PRED = # infections statistically predicted by national baseline
CLdays = # Central Line Days
SIR = Standardized infection ratio (OBS/PRED # of infections)
NA = Data not shown for hospitals with <50 central line days
N = <50 central line days reported
NC = SIR not calculated for hospitals with <1 predicted infection
*Significantly different than 2015 national baseline

Central Line-Associated Bloodstream Infections (CLABSI) in Adult & Pediatric ICUs and Wards
Standardized Infection Ratios: January 1 – December 31, 2021
Hospital Group: Hospitals with Primary Medical School Affiliation

HOSPITAL INTERVAL	OBS	PRED	CLdays	SIR
Wake Forest University Baptist Medical	29	29.6	27090	1.0
Duke University Hospital	82	76.7	70863	1.1
Vidant Medical Center	45	40.7	38230	1.1
UNC Health	73	61.2	51119	1.2
Atrium Health Carolinas Medical Center	51	34.8	33621	1.5



Data reported as of June 2, 2022.
OBS = # infections observed
PRED = # infections statistically predicted by national baseline
CLdays = # Central Line Days
SIR = Standardized infection ratio (OBS/PRED # of infections)
NA = Data not shown for hospitals with <50 central line days
N = <50 central line days reported
NC = SIR not calculated for hospitals with <1 predicted infection
*Significantly different than 2015 national baseline

2. CLABSI in Neonatal Intensive Care Units

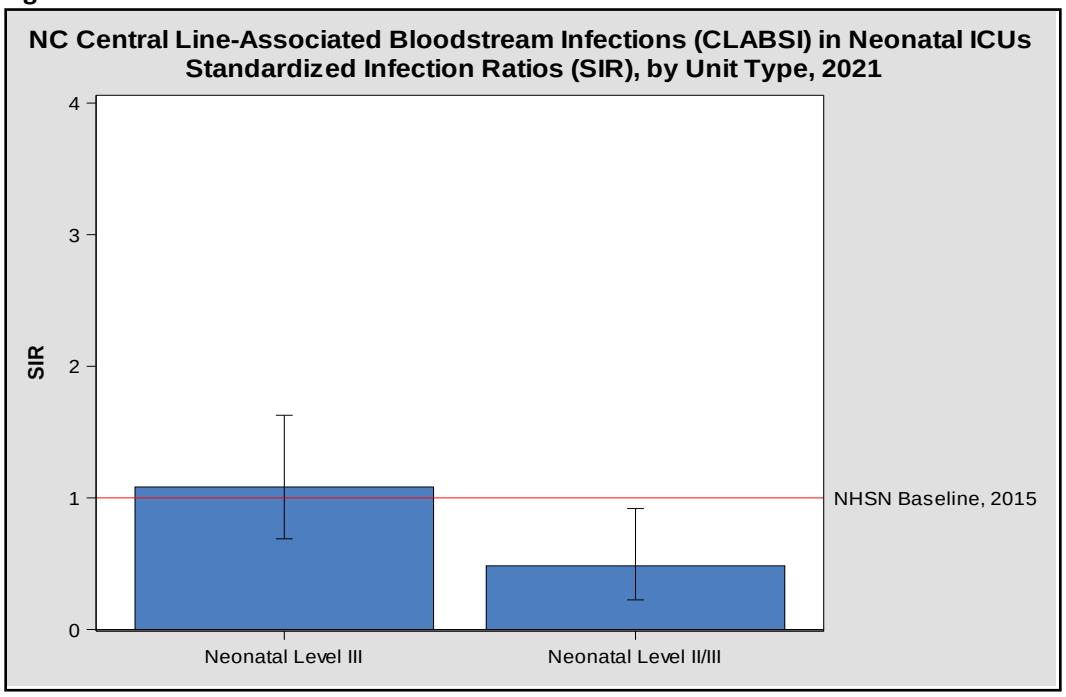
North Carolina 2021 CLABSI Highlights in NICUs

- In 2021, North Carolina hospitals reported 43 infections in neonatal ICUs (NICUs), compared to the 61.39 infections that were predicted. This was better than the 2015 national experience.
- The most commonly identified organism from NICU CLABSI patients was *Staphylococcus aureus*.

Table 2. NC Central Line Associated Bloodstream Infections (CLABSI) in neonatal ICUs, 2021

Year	# Observed Infections	# Predicted Infections	How Does North Carolina Compare to the National Experience?
2021	43	61.39	★ BETTER: fewer than the number of infections predicted (better than the national experience)

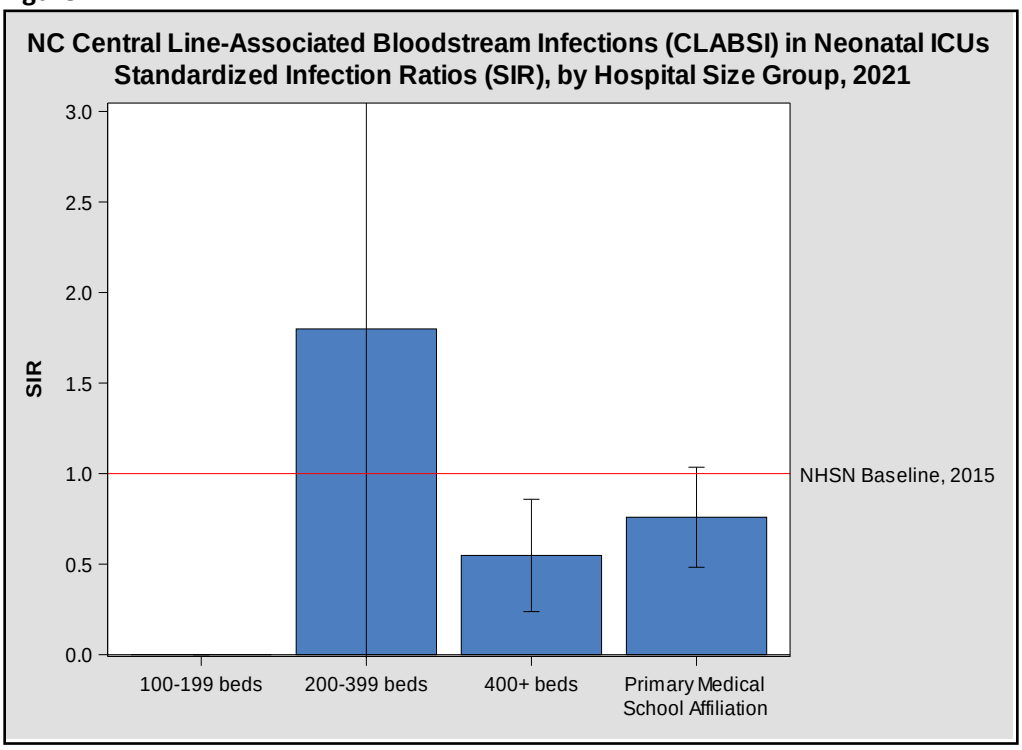
Figure 11.



Interpreting Figure 11:

- In 2021, level II/III Neonatal ICUs observed fewer CLABSIs than predicted, performing BETTER than the 2015 national experience
- Level III Neonatal ICUs observed about the same number of CLABSIs as predicted, performing the SAME as the national experience

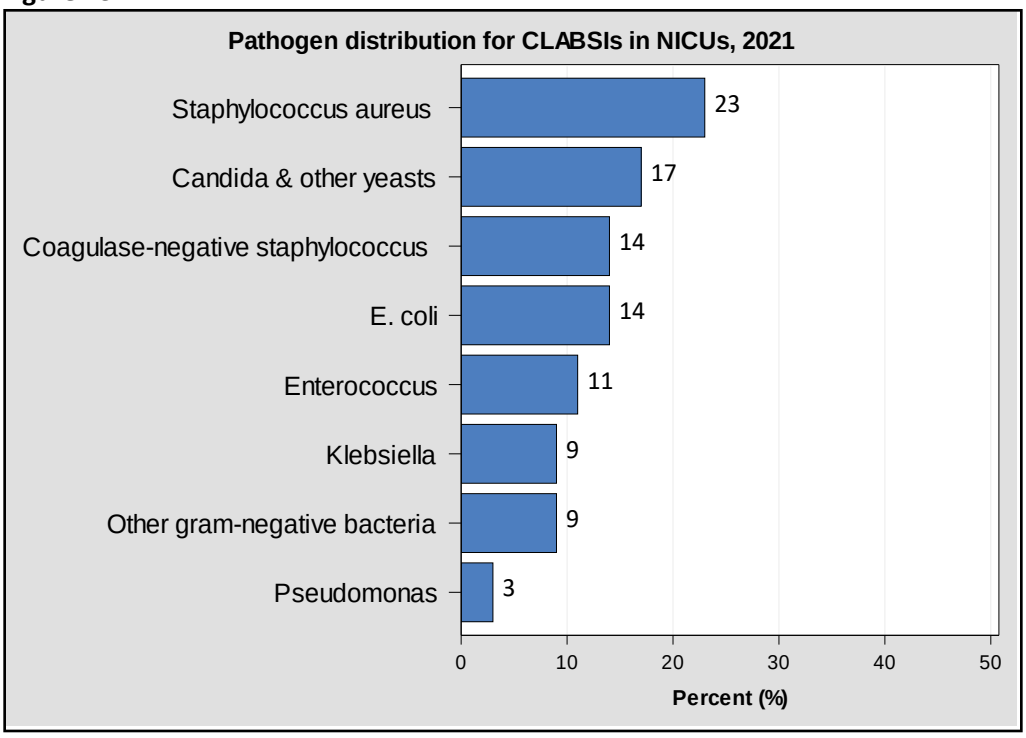
Figure 12.



Interpreting Figure 12:

- Not all hospital size groups have NICU locations
- Hospitals with 200-399 beds and hospitals with primary medical school affiliation experienced the same number of CLABSIs in NICUs as predicted, performing the SAME as the national experience
- Hospitals with 400+ beds experienced fewer CLABSIs in NICUs than predicted, performing BETTER than the national experience

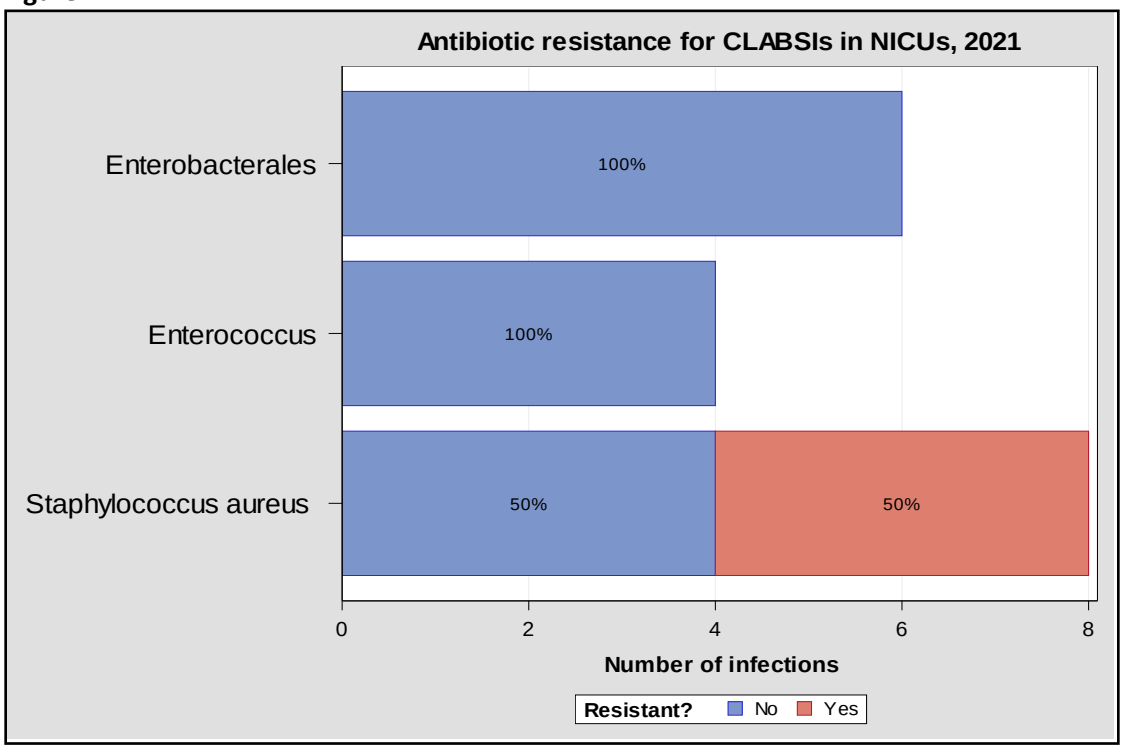
Figure 13.



Interpreting Figure 13:

- In 2021, *Staphylococcus aureus* (23%), was the most common pathogen identified from CLABSIs in NICU locations, followed by *Candida* spp. and other yeasts
- *Staphylococcus aureus* is a much more common cause of CLABSIs in NICUs than in adult/pediatric wards/ICUs

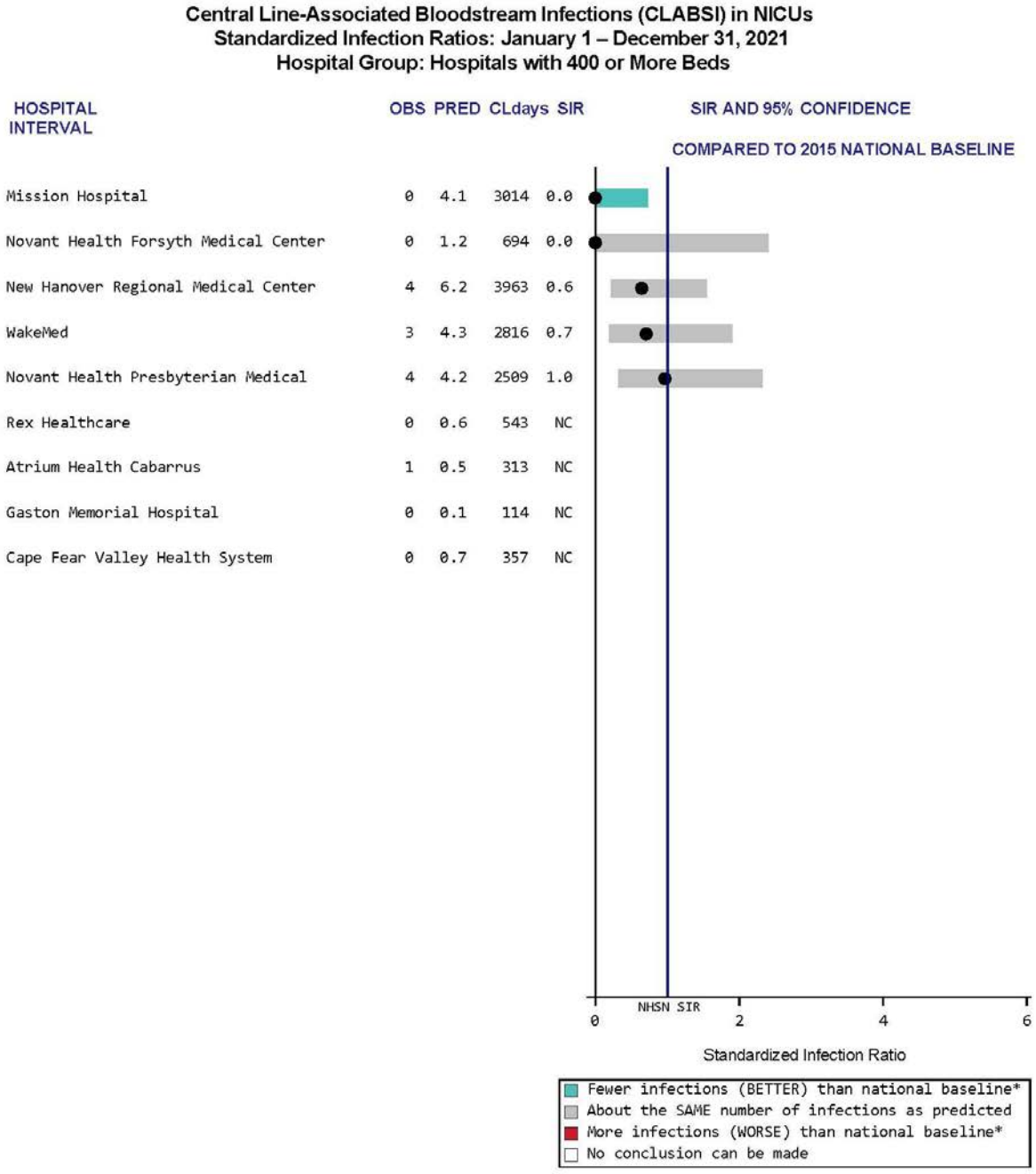
Figure 14.



Interpreting Figure 14:

- In 2021, 4 of 8 (50%) *Staphylococcus aureus* identified among observed CLABSI infections in NICUs were resistant to methicillin
- None of the Enterobacterales or *Enterococcus* spp. from CLABSIs in NICUs were resistant to carbapenems or vancomycin, respectively

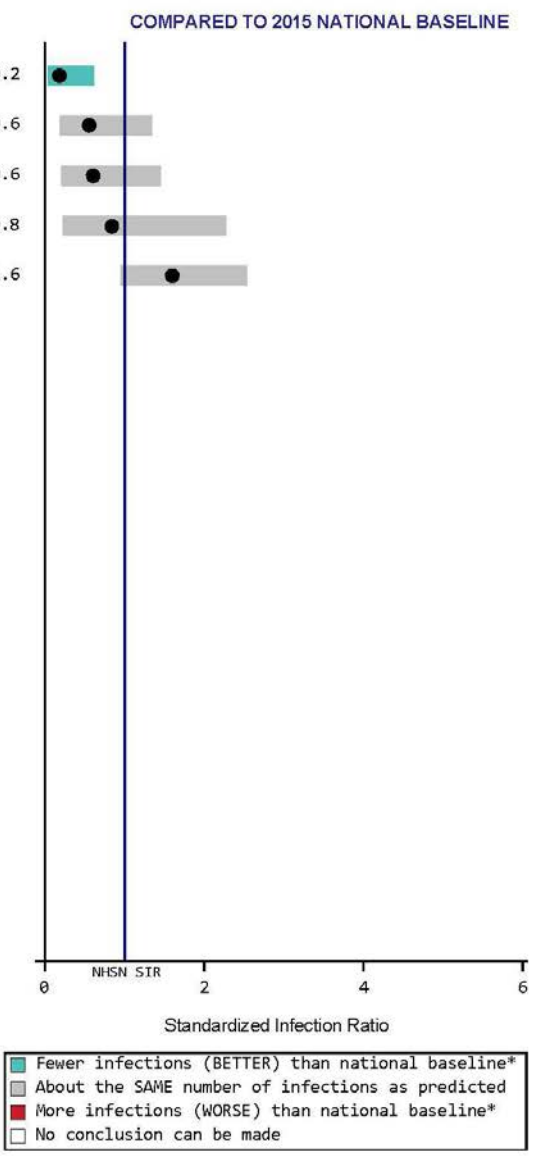
The following SIR plots summarize CLABSI infection data among NICUs in North Carolina hospitals by hospital groups (Appendix D). *Please note that the caterpillar plot was not generated for facilities with 200 – 399 beds due to all of the facilities having <1.0 predicted infections.



Data reported as of June 2, 2022.
OBS = # infections observed
PRED = # infections statistically predicted by national baseline
CLdays = # Central Line Days
SIR = Standardized infection ratio (OBS/PRED # of infections)
NA = Data not shown for hospitals with <50 central line days
N = <50 central line days reported
NC = SIR not calculated for hospitals with <1 predicted infection
*Significantly different than 2015 national baseline

Central Line-Associated Bloodstream Infections (CLABSI) in NICUs
Standardized Infection Ratios: January 1 – December 31, 2021
Hospital Group: Hospitals with Primary Medical School Affiliation

HOSPITAL INTERVAL	OBS	PRED	CLdays	SIR
Duke University Hospital	2	10.8	6912	0.2
Atrium Health Carolinas Medical Center	4	7.2	5730	0.6
UNC Health	4	6.6	4418	0.6
Vidant Medical Center	3	3.6	2352	0.8
Wake Forest University Baptist Medical	16	10.0	6323	1.6



Data reported as of June 2, 2022.
OBS = # infections observed
PRED = # infections statistically predicted by national baseline
CLdays = # Central Line Days
SIR = Standardized infection ratio (OBS/PRED # of infections)
NA = Data not shown for hospitals with <50 central line days
N = <50 central line days reported
NC = SIR not calculated for hospitals with <1 predicted infection
*Significantly different than 2015 national baseline

B. Catheter-Associated Urinary Tract Infections (CAUTI)

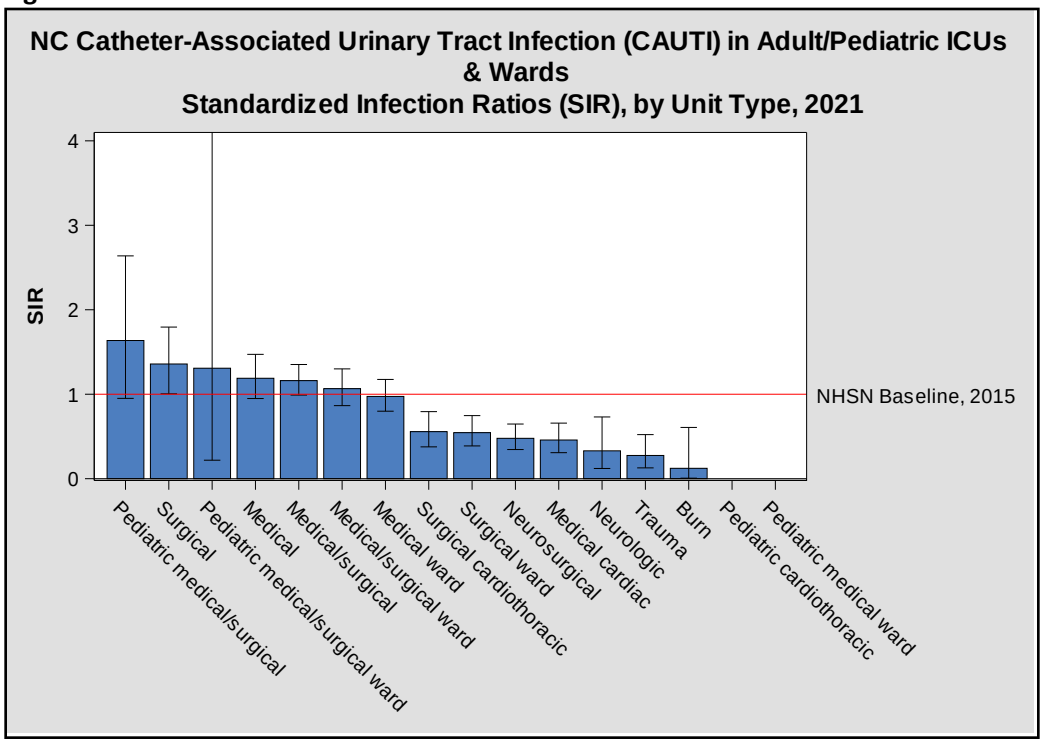
North Carolina 2021 CAUTI Highlights

- In 2021, North Carolina hospitals reported 648 CAUTI infections, compared to the 755.25 infections that were predicted. This was better than the 2015 national experience.
- The most commonly identified organisms were *Escherichia coli* and *Enterococcus* spp.

Table 3. NC Catheter-Associated Urinary Tract Infections (CAUTI) in ICUs and wards, 2021

Year	# Observed Infections	# Predicted Infections	How Does North Carolina Compare to the National Experience?
2021	648	755.25	★BETTER: Fewer infections than were predicted (better than the national experience)

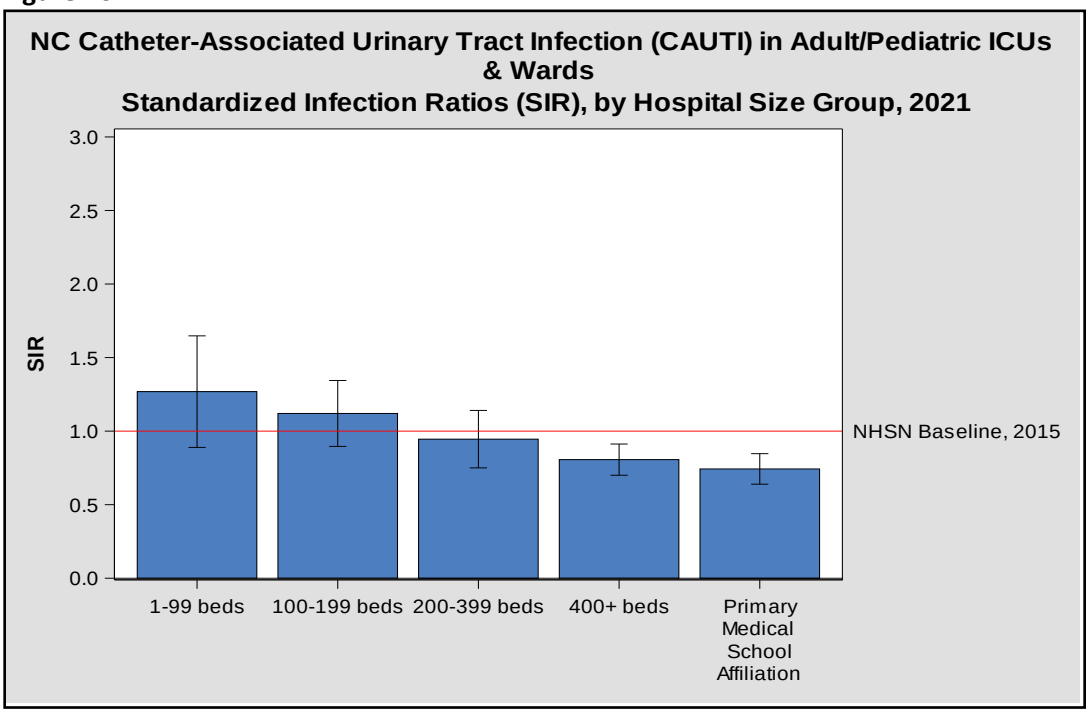
Figure 15.



Interpreting Figure 15:

- The surgical ward and the burn, trauma, neurologic, medical cardiac, neurosurgical, and surgical cardiothoracic ICUs had fewer CAUTIs than predicted, performing BETTER than the national experience
- The surgical ICU reported more CAUTIs than predicted, performing WORSE than the national experience
- All other locations reported about the same number of CAUTIs as predicted, performing the SAME as the national experience
- The pediatric cardiothoracic ICU and pediatric medical ward reported 0 CAUTI events

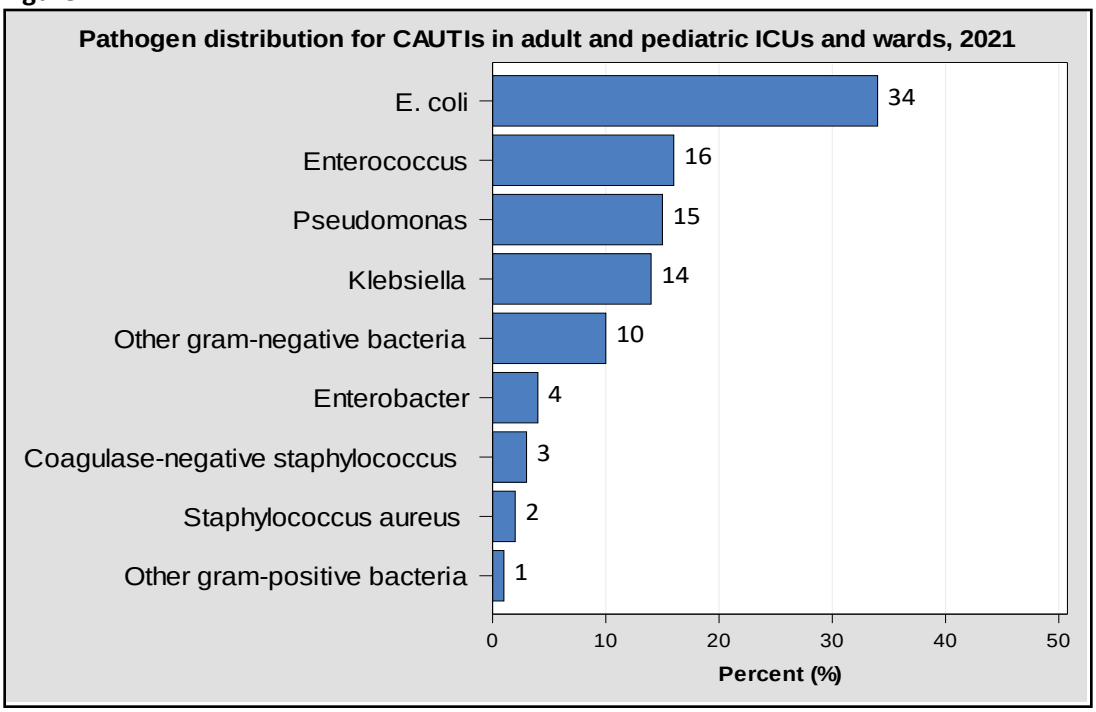
Figure 16.



Interpreting Figure 16:

- Hospitals with 400+ beds and primary medical school affiliations had fewer CAUTIs than predicted, performing BETTER than the national experience
- All other hospital size groups reported about the same number of infections as predicted, performing the SAME as the 2015 national experience

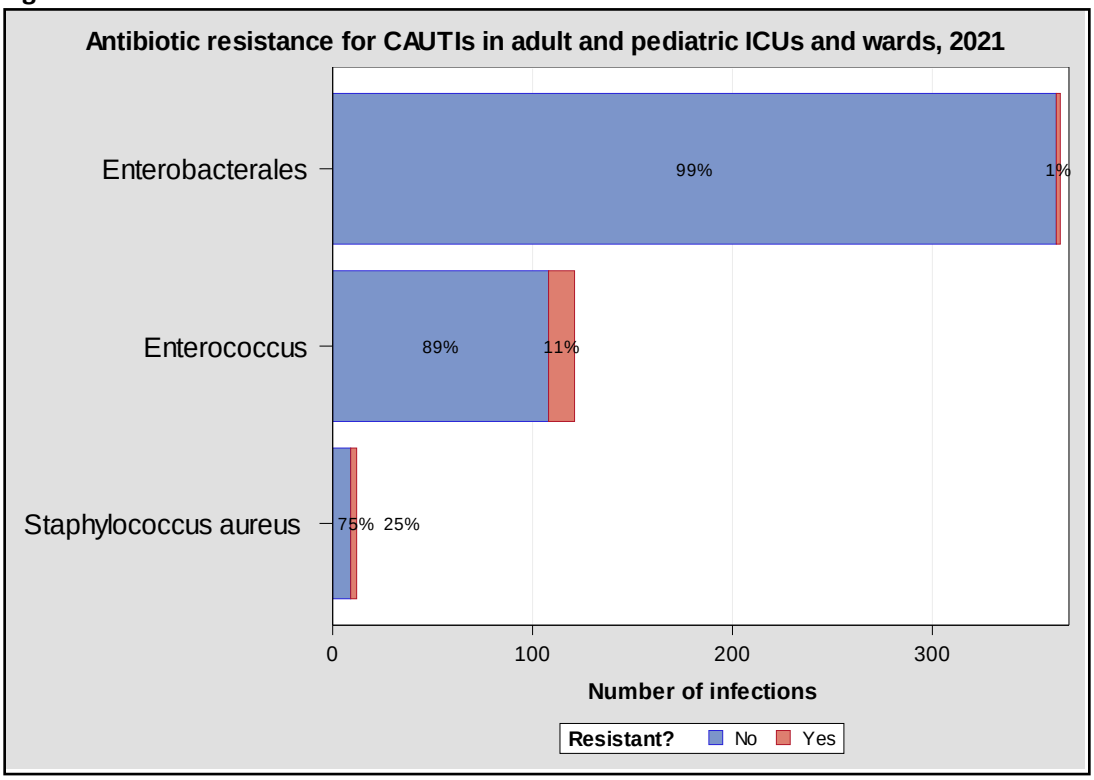
Figure 17.



Interpreting Figure 17:

- *E. coli* (34%) and *Enterococcus* spp. (16%) were the most commonly-identified pathogens among reported CAUTI infections in 2021
- *Candida* spp. and other yeasts are considered excluded organisms and cannot be used to meet the CAUTI definition

Figure 18.



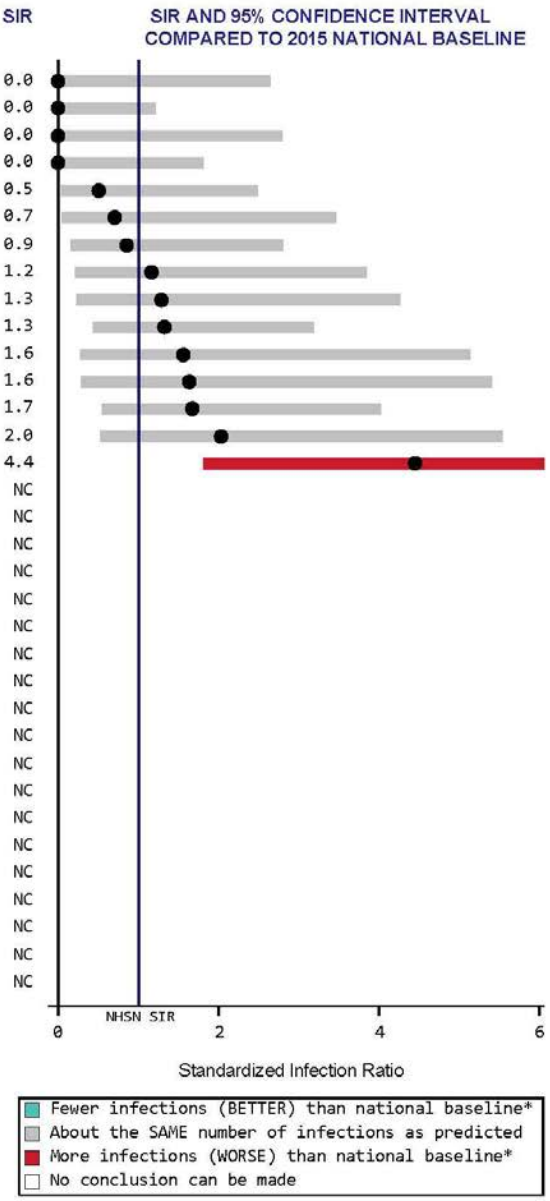
Interpreting Figure 18:

- Three of 12 (25%) *Staphylococcus aureus* identified among reported CAUTIs were resistant to methicillin
- 11% of *Enterococcus* spp. identified among reported CAUTIs were resistant to Vancomycin
- 1% of Enterobacterales identified among reported CAUTIs were resistant to carbapenems

The following SIR plots summarize CAUTI infection data for North Carolina hospitals by hospital groups (Appendix D).

Catheter-Associated Urinary Tract Infections (CAUTI)
Standardized Infection Ratios: January 1 – December 31, 2021
Hospital Group: Hospitals with less than 100 Beds

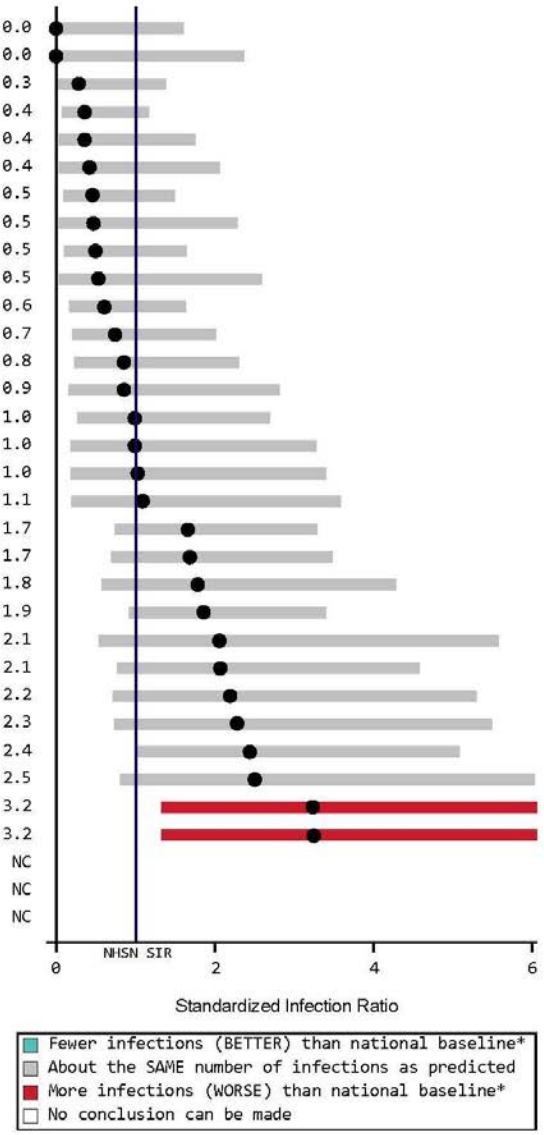
HOSPITAL	OBS	PRED	UCD	SIR
Davis Regional Medical Center	0	1.1	1365	0.0
Maria Parham Medical Center	0	2.5	3515	0.0
Granville Medical Center	0	1.1	2081	0.0
Hugh Chatham Memorial Hospital	0	1.7	3215	0.0
Central Carolina Hospital	1	2.0	2810	0.5
Randolph Hospital Dba Randolph Health	1	1.4	2693	0.7
Halifax Regional Medical Center	2	2.4	3472	0.9
Duke LifePoint-Harris Regional Hospital	2	1.7	3176	1.2
Vidant Duplin Hospital	2	1.5	1865	1.3
Betsy Johnson Hospital	4	3.0	3875	1.3
Novant Health Medical Park Hospital	2	1.3	1804	1.6
Vidant Beaufort Hospital	2	1.2	2301	1.6
Wake Forest Baptist Health-Lexington	4	2.4	3172	1.7
Columbus Regional Healthcare System	3	1.5	2820	2.0
Central Harnett Hospital	6	1.4	2272	4.4
McDowell Hospital	1	0.5	934	NC
Cherokee Indian Hospital	0	0.1	244	NC
Martin General Hospital	2	0.8	1484	NC
Carteret General Hospital	1	0.6	1136	NC
Kings Mountain Hospital	0	0.1	286	NC
Person Memorial Hospital	0	0.6	1071	NC
Atrium Health Anson	0	0.1	121	NC
Annie Penn Hospital	2	0.9	1814	NC
North Carolina Specialty Hospital	0	0.1	215	NC
Wake Forest Baptist Health-Davie Medical	0	0.4	806	NC
Johnston Health Clayton	3	0.5	798	NC
Firsthealth Moore Regional-Hoke	0	0.1	159	NC
Firsthealth Moore Regional-Richmond	1	0.7	1299	NC
Cape Fear Valley Hoke Hospital	0	0.1	288	NC
Novant Health Kernersville	1	0.8	1102	NC
WakeMed North Family Health & Women's	1	0.4	557	NC
Novant Health Clemmons Medical Center	0	0.4	528	NC
Novant Health Mint Hill Medical Center	2	0.5	966	NC
Rex Holly Springs Hospital	0	0.0	69	NC



Data reported as of June 2, 2022.
OBS = # infections observed
PRED = # infections statistically predicted by national baseline
UCD = # Urinary Catheter Days
SIR = Standardized infection ratio (OBS/PRED # of infections)
NA = Data not shown for hospitals with <50 catheter days
N = <50 catheter days reported
NC = SIR not calculated for hospitals with <1 predicted infection
*Significantly different than 2015 national baseline

Catheter-Associated Urinary Tract Infections (CAUTI)
Standardized Infection Ratios: January 1 – December 31, 2021
Hospital Group: Hospitals with 100 to 199 Beds

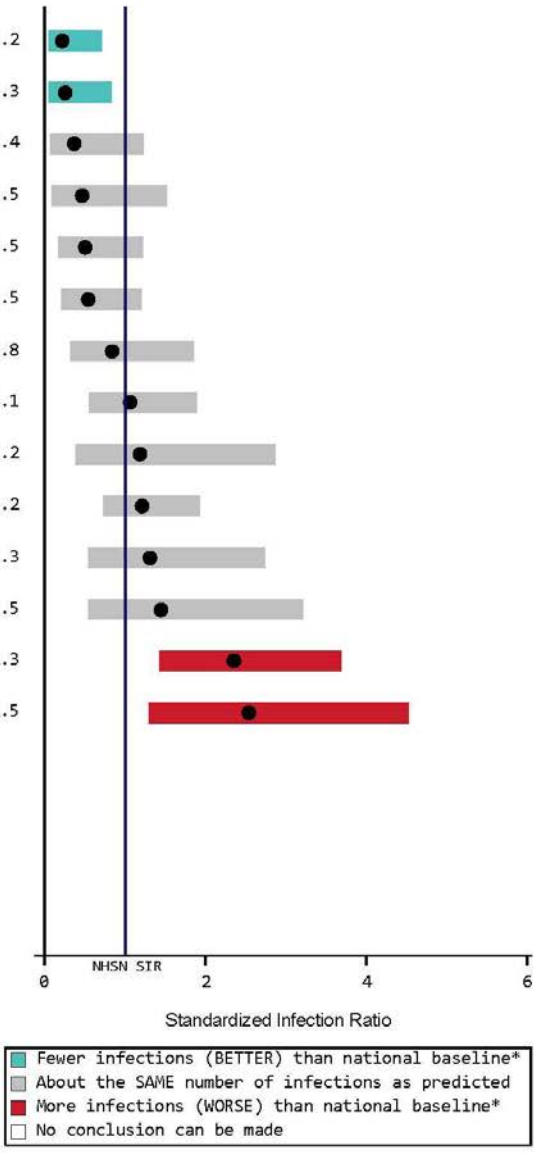
HOSPITAL	OBS	PRED	UCD	SIR
Sampson Regional Medical Center	0	1.9	2394	0.0
UNC Rockingham Health	0	1.3	1750	0.0
Atrium Health Union	1	3.6	5066	0.3
Duke Raleigh Hospital	2	5.7	5500	0.4
Lenoir Memorial Hospital	1	2.8	4003	0.4
Northern Regional Hospital	1	2.4	3502	0.4
Frye Regional Medical Center	2	4.4	5457	0.5
Atrium Health University City	1	2.2	2706	0.5
UNC Health Blue Ridge	2	4.0	3986	0.5
Wake Forest Baptist Health-Wilkes	1	1.9	2643	0.5
Caldwell Memorial Hospital	3	5.0	7137	0.6
Iredell Memorial Hospital	3	4.1	5777	0.7
Novant Health Huntersville	3	3.5	3575	0.8
Atrium Health Lincoln	2	2.3	3293	0.9
Haywood Regional Medical Center	3	3.0	2946	1.0
Sentara Albemarle Medical Center	2	2.0	1953	1.0
ARHS-Watauga Medical Center	2	1.9	1925	1.0
Onslow Memorial Hospital	2	1.8	2519	1.1
Nash Health Care Systems	7	4.2	5781	1.7
Pardee Hospital	6	3.6	4544	1.7
Lake Norman Regional Medical Center	4	2.3	3128	1.8
Johnston Health	9	4.9	5931	1.9
Rutherford Regional Medical Center	3	1.5	2115	2.1
Vidant Edgecombe Hospital	5	2.4	2283	2.1
Atrium Health Stanly	4	1.8	2568	2.2
Novant Health Brunswick Medical Center	4	1.8	1772	2.3
Vidant Roanoke Chowan Hospital	6	2.5	2386	2.4
Wesley Long Hospital	4	1.6	2205	2.5
Advent Health Hendersonville	6	1.9	2692	3.2
Scotland Memorial Hospital	6	1.8	2664	3.2
Novant Health Thomasville Medical Center	0	0.5	566	NC
Wilson Medical Center	1	0.9	1293	NC
Cone Green Valley	0	0.3	375	NC



Data reported as of June 2, 2022.
OBS = # infections observed
PRED = # infections statistically predicted by national baseline
UCD = # Urinary Catheter Days
SIR = Standardized infection ratio (OBS/PRED # of infections)
NA = Data not shown for hospitals with <50 catheter days
N = <50 catheter days reported
NC = SIR not calculated for hospitals with <1 predicted infection
*Significantly different than 2015 national baseline

Catheter-Associated Urinary Tract Infections (CAUTI)
Standardized Infection Ratios: January 1 – December 31, 2021
Hospital Group: Hospitals with 200 to 399 Beds

HOSPITAL	OBS	PRED	UCD	SIR
Atrium Health Pineville	2	9.3	9343	0.2
FirstHealth Moore Regional Hospital	2	8.0	9014	0.3
Alamance Regional Medical Center	2	5.4	4243	0.4
Atrium Health Mercy	2	4.3	5379	0.5
Wayne Memorial Hospital	4	7.9	7916	0.5
Duke Regional Hospital	5	9.2	7191	0.5
Atrium Health Cleveland	5	6.0	6816	0.8
Southeastern Regional Medical Center	10	9.4	9714	1.1
Novant Health Rowan Medical Center	4	3.4	3868	1.2
High Point Regional Health System	16	13.2	10476	1.2
CarolinaEast Medical Center	6	4.6	5355	1.3
WakeMed Cary Hospital	5	3.4	4955	1.5
Catawba Valley Medical Center	17	7.2	8278	2.3
Novant Health Matthews Medical Center	10	3.9	5684	2.5



Data reported as of June 2, 2022.
OBS = # infections observed
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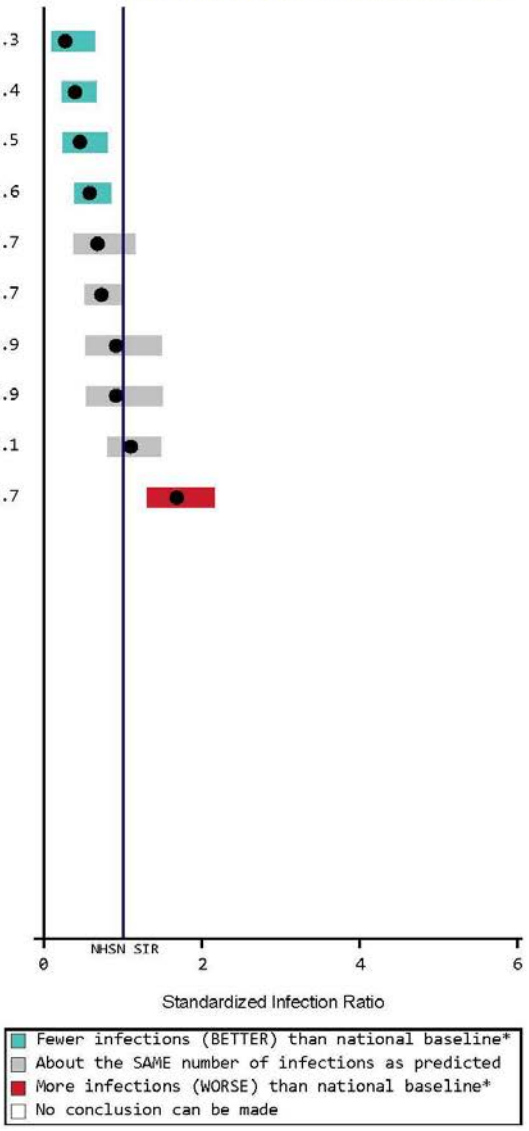
UCD = # Urinary Catheter Days
SIR = Standardized infection ratio (OBS/PRED # of infections)
NA = Data not shown for hospitals with <50 catheter days
N = <50 catheter days reported
NC = SIR not calculated for hospitals with <1 predicted infection
*Significantly different than 2015 national baseline

Catheter-Associated Urinary Tract Infections (CAUTI)
Standardized Infection Ratios: January 1 – December 31, 2021
Hospital Group: Hospitals with 400 or More Beds

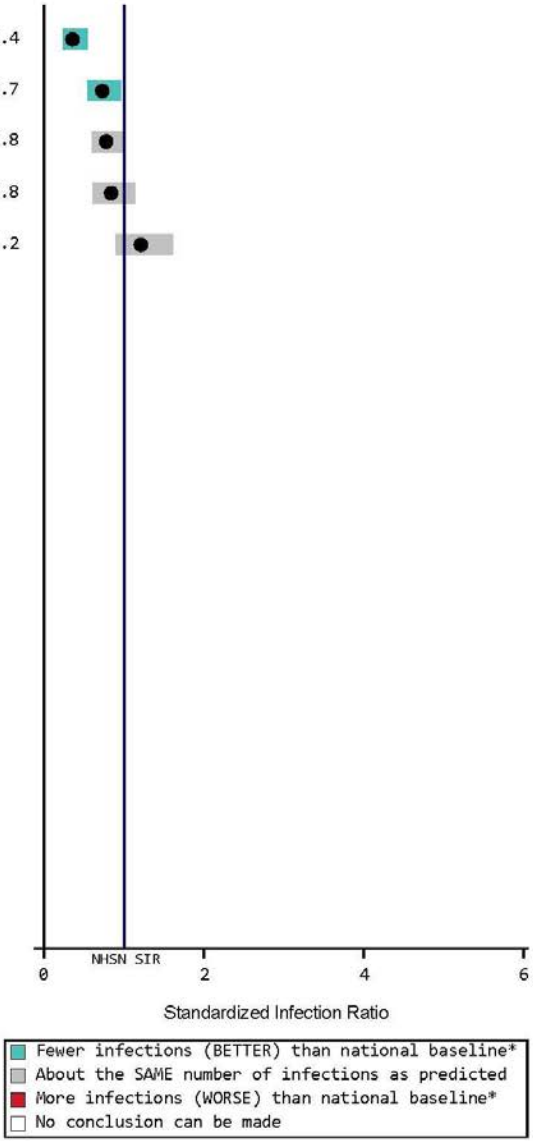
HOSPITAL	OBS	PRED	UCD	SIR
Gaston Memorial Hospital	4	15.0	15808	0.3
WakeMed	13	32.8	21048	0.4
Moses Cone Hospital	10	22.1	12878	0.5
Mission Hospital	24	41.5	25057	0.6
Atrium Health Cabarrus	12	17.6	17665	0.7
Rex Healthcare	32	44.2	29386	0.7
Novant Health Presbyterian Medical	14	15.3	9797	0.9
Cape Fear Valley Health System	14	15.3	12064	0.9
Novant Health Forsyth Medical Center	40	36.5	23541	1.1
New Hanover Regional Medical Center	59	35.0	25041	1.7



Data reported as of June 2, 2022.
OBS = # infections observed
PRED = # infections statistically predicted by national baseline
UCD = # Urinary Catheter Days
SIR = Standardized infection ratio (OBS/PRED # of infections)
NA = Data not shown for hospitals with <50 catheter days
N = <50 catheter days reported
NC = SIR not calculated for hospitals with <1 predicted infection
*Significantly different than 2015 national baseline

Catheter-Associated Urinary Tract Infections (CAUTI)
Standardized Infection Ratios: January 1 – December 31, 2021
Hospital Group: Hospitals with Primary Medical School Affiliation

HOSPITAL	OBS	PRED	UCD	SIR
Wake Forest University Baptist Medical	20	56.1	34964	0.4
UNC Health	44	61.0	36021	0.7
Duke University Hospital	53	68.1	43356	0.8
Atrium Health Carolinas Medical Center	37	44.4	30555	0.8
Vidant Medical Center	43	35.5	22406	1.2



Data reported as of June 2, 2022.
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PRED = # infections statistically predicted by national baseline
UCD = # Urinary Catheter Days
SIR = Standardized infection ratio (OBS/PRED # of infections)
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N = <50 catheter days reported
NC = SIR not calculated for hospitals with <1 predicted infection
*Significantly different than 2015 national baseline

C. Surgical Site Infections (SSI)

1. Abdominal Hysterectomies

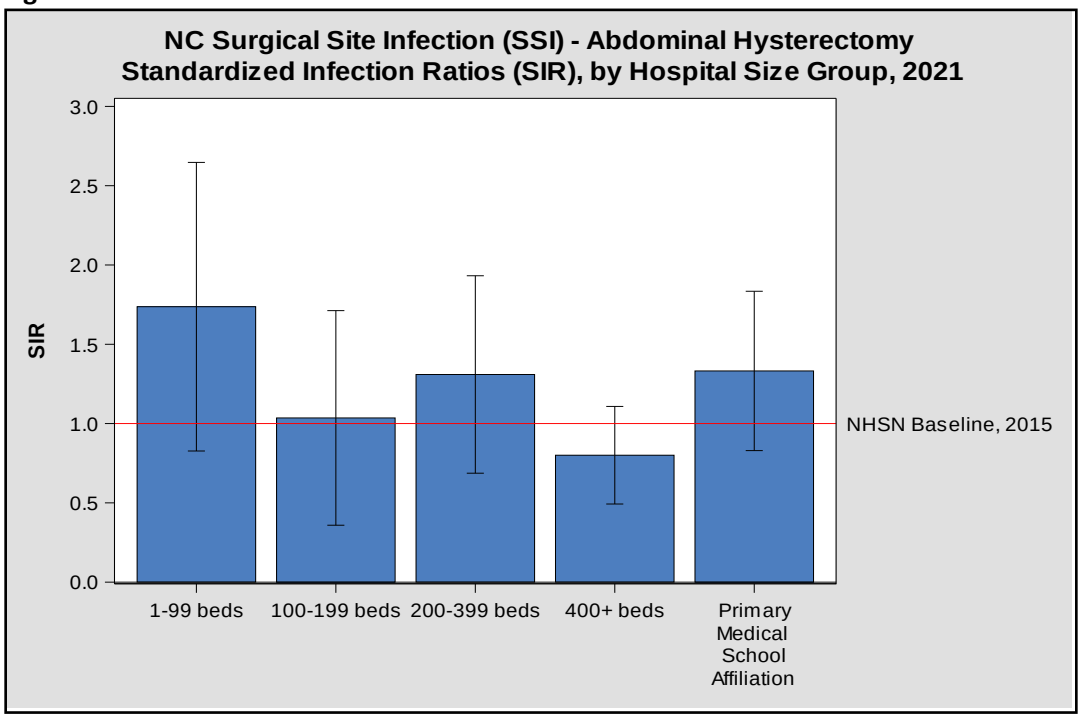
North Carolina 2021 SSI Following Abdominal Hysterectomy Highlights

- North Carolina reported 93 surgical site infections (SSIs) after inpatient abdominal hysterectomies performed on adults ≥ 18 years in North Carolina acute care hospitals, compared to the 84.71 infections predicted. This was the same as the 2015 national experience
- In 2021, the most commonly identified organism from adult patients with SSI following inpatient abdominal hysterectomies was other gram-positive bacteria

Table 4. NC Surgical Site Infections following Abdominal Hysterectomies, 2021

Year	# Observed Infections	# Predicted Infections	How Does North Carolina Compare to the National Experience?
2021	93	84.71	= SAME: about the same number of infections as predicted (same as the national experience)

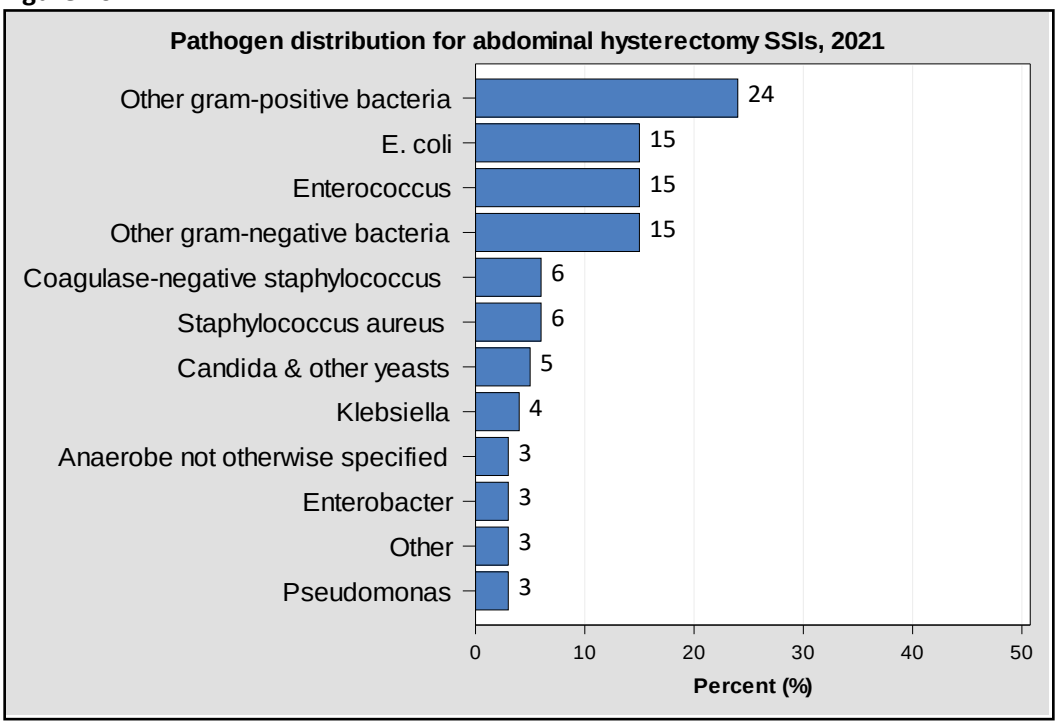
Figure 19.



Interpreting Figure 19:

- All hospital size groups observed about the same number of SSIs following abdominal hysterectomies as predicted, performing the SAME as the 2015 national experience

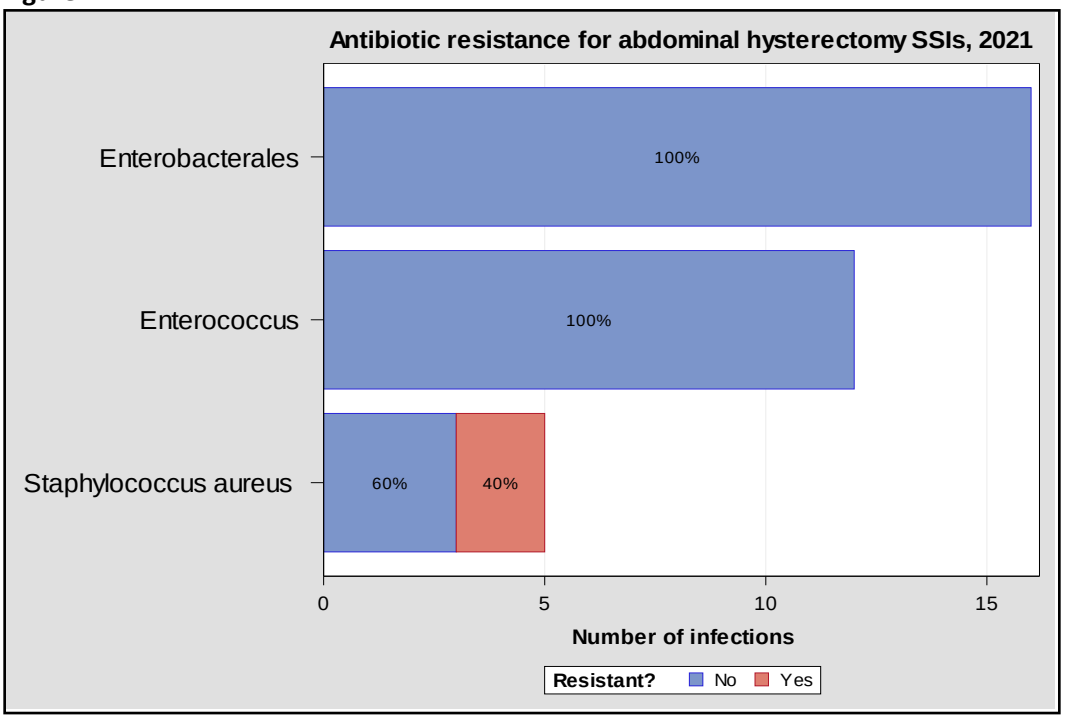
Figure 20.



Interpreting Figure 20:

- Other gram-positive bacteria (24%) were the most commonly reported pathogen among SSIs following abdominal hysterectomies

Figure 21.



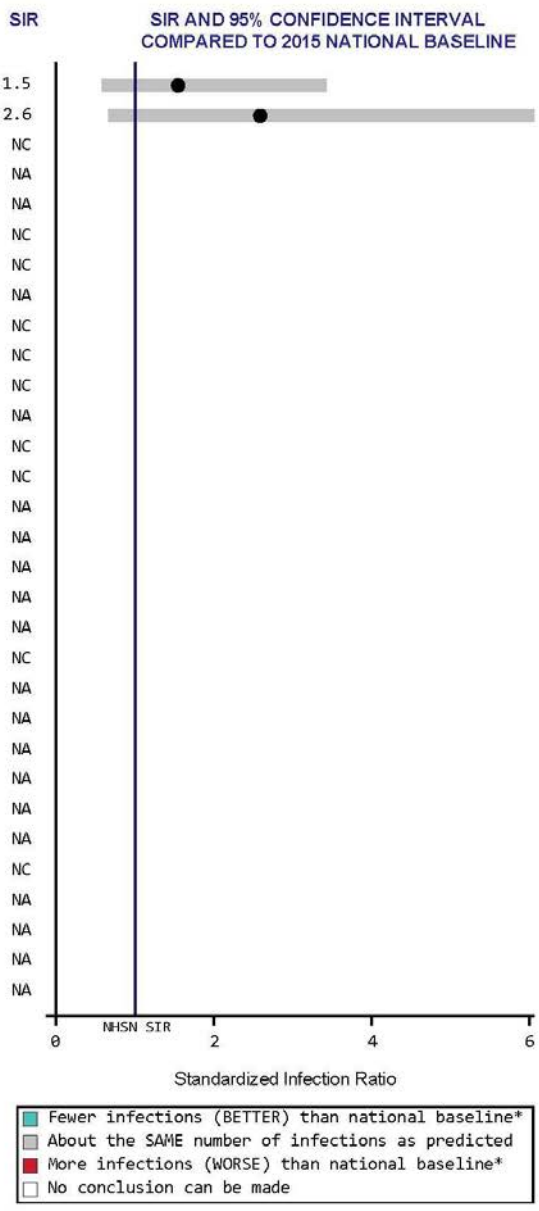
Interpreting Figure 21:

- In 2021, 40% of *Staphylococcus aureus* identified among SSIs following abdominal hysterectomies were resistant to methicillin
- None of the Enterobacterales or *Enterococcus* spp. from SSIs following abdominal hysterectomies were resistant to carbapenems or vancomycin, respectively

The following SIR plots summarize SSI infection following abdominal hysterectomy data for North Carolina hospitals by hospital groups (Appendix D).

Surgical Site Infections (SSI) - Abdominal Hysterectomies
Standardized Infection Ratios: January 1 – December 31, 2021
Hospital Group: Hospitals with less than 100 Beds

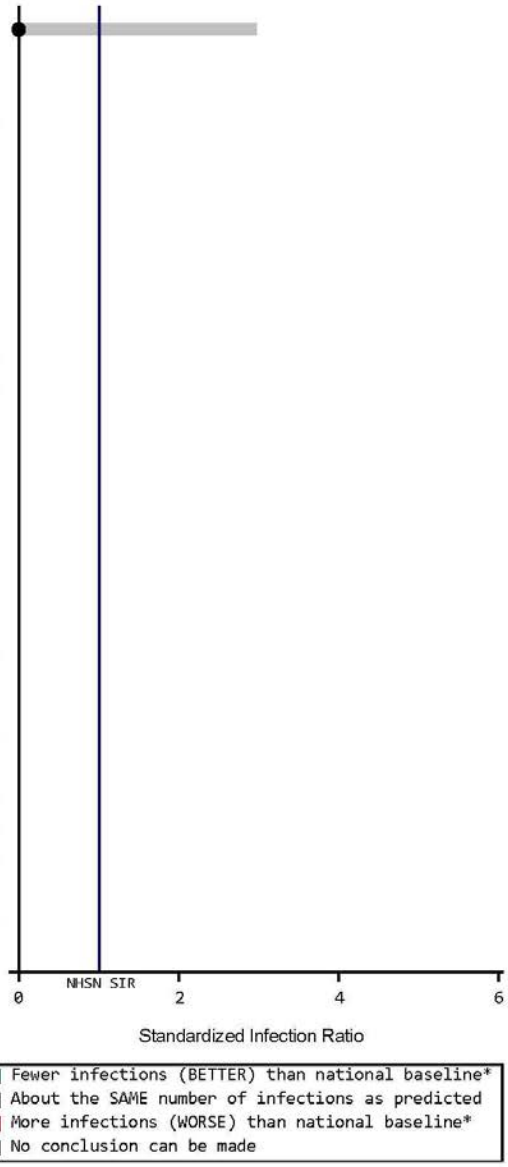
HOSPITAL	OBS	PRED	PROC	SIR
Novant Health Medical Park Hospital	5	3.2	375	1.5
WakeMed North Family Health & Women's	3	1.2	147	2.6
McDowell Hospital	1	0.2	24	NC
Cherokee Indian Hospital	NA	NA	N	NA
Duke LifePoint-Harris Regional Hospital	NA	NA	N	NA
Davis Regional Medical Center	1	0.4	42	NC
Columbus Regional Healthcare System	0	0.3	32	NC
Martin General Hospital	NA	NA	N	NA
Maria Parham Medical Center	0	0.2	27	NC
Randolph Hospital Dba Randolph Health	0	0.6	72	NC
Vidant Beaufort Hospital	0	0.6	64	NC
Granville Medical Center	NA	NA	N	NA
Carteret General Hospital	1	0.5	63	NC
Vidant Duplin Hospital	0	0.2	20	NC
Central Carolina Hospital	NA	NA	N	NA
Kings Mountain Hospital	NA	NA	N	NA
Person Memorial Hospital	NA	NA	N	NA
Wake Forest Baptist Health-Lexington	NA	NA	N	NA
Halifax Regional Medical Center	NA	NA	N	NA
Betsy Johnson Hospital	1	0.3	29	NC
Hugh Chatham Memorial Hospital	NA	NA	N	NA
Atrium Health Anson	NA	NA	N	NA
Annie Penn Hospital	NA	NA	N	NA
North Carolina Specialty Hospital	NA	NA	N	NA
Wake Forest Baptist Health-Davie Medical	NA	NA	N	NA
Johnston Health Clayton	NA	NA	N	NA
Firsthealth Moore Regional-Richmond	0	0.2	23	NC
Novant Health Kernersville	NA	NA	N	NA
Novant Health Clemmons Medical Center	NA	NA	N	NA
Novant Health Mint Hill Medical Center	NA	NA	N	NA
Rex Holly Springs Hospital	NA	NA	N	NA



Data reported as of June 2, 2022.
OBS = # infections observed
PRED = # infections statistically predicted by national baseline
PROC = # of Procedures
SIR = Standardized infection ratio (OBS/PRED # of infections)
NA = Data not shown for hospitals with <20 procedures
NC = SIR not calculated for hospitals with <1 predicted infection
*Significantly different than 2015 national baseline

Surgical Site Infections (SSI) - Abdominal Hysterectomies
Standardized Infection Ratios: January 1 – December 31, 2021
Hospital Group: Hospitals with 100 to 199 Beds

HOSPITAL	OBS	PRED	PROC	SIR
Novant Health Huntersville	0	1.0	123	0.0
Atrium Health University City	2	0.6	69	NC
Pardee Hospital	0	0.6	66	NC
Rutherford Regional Medical Center	NA	NA	N	NA
Advent Health Hendersonville	0	0.7	82	NC
Haywood Regional Medical Center	NA	NA	N	NA
ARHS-Watauga Medical Center	NA	NA	N	NA
Sentara Albemarle Medical Center	0	0.7	70	NC
Vidant Roanoke Chowan Hospital	0	0.3	36	NC
Vidant Edgecombe Hospital	1	0.3	33	NC
Novant Health Thomasville Medical Center	2	0.5	56	NC
Sampson Regional Medical Center	NA	NA	N	NA
Lenoir Memorial Hospital	NA	NA	N	NA
Iredell Memorial Hospital	0	0.6	81	NC
Nash Health Care Systems	0	0.2	24	NC
Northern Regional Hospital	1	0.2	23	NC
Lake Norman Regional Medical Center	NA	NA	N	NA
Frye Regional Medical Center	0	0.4	54	NC
Johnston Health	0	0.2	23	NC
Scotland Memorial Hospital	0	0.3	38	NC
Novant Health Brunswick Medical Center	0	0.6	70	NC
Atrium Health Lincoln	NA	NA	N	NA
Wilson Medical Center	1	0.4	53	NC
Onslow Memorial Hospital	NA	NA	N	NA
UNC Health Blue Ridge	NA	NA	N	NA
Atrium Health Union	1	0.4	49	NC
Caldwell Memorial Hospital	NA	NA	N	NA
Duke Raleigh Hospital	NA	NA	N	NA
Atrium Health Stanly	NA	NA	N	NA
UNC Rockingham Health	0	0.3	40	NC
Wake Forest Baptist Health-Wilkes	NA	NA	N	NA
Wesley Long Hospital	0	0.2	25	NC



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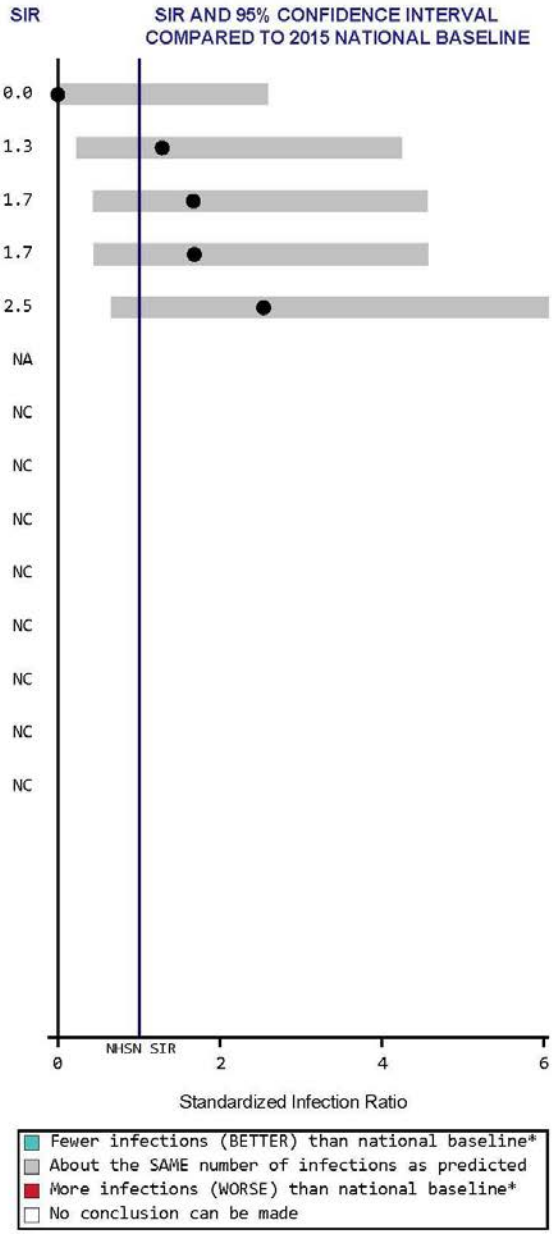
PROC = # of Procedures
SIR = Standardized infection ratio (OBS/PRED # of infections)
NA = Data not shown for hospitals with <20 procedures
NC = SIR not calculated for hospitals with <1 predicted infection
*Significantly different than 2015 national baseline

Surgical Site Infections (SSI) - Abdominal Hysterectomies
Standardized Infection Ratios: January 1 – December 31, 2021
Hospital Group: Hospitals with 200 to 399 Beds

HOSPITAL	OBS	PRED	PROC	SIR
CarolinaEast Medical Center	0	1.2	131	0.0
FirstHealth Moore Regional Hospital	2	1.6	161	1.3
Novant Health Matthews Medical Center	3	1.8	214	1.7
High Point Regional Health System	3	1.8	180	1.7
WakeMed Cary Hospital	3	1.2	138	2.5
Atrium Health Mercy	NA	NA	N	NA
Atrium Health Pineville	0	0.4	48	NC
Novant Health Rowan Medical Center	3	0.9	106	NC
Wayne Memorial Hospital	0	0.9	101	NC
Duke Regional Hospital	0	0.9	105	NC
Catawba Valley Medical Center	1	0.9	100	NC
Alamance Regional Medical Center	1	0.2	25	NC
Atrium Health Cleveland	0	0.4	38	NC
Southeastern Regional Medical Center	1	0.8	81	NC



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OBS = # infections observed
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PROC = # of Procedures
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NA = Data not shown for hospitals with <20 procedures
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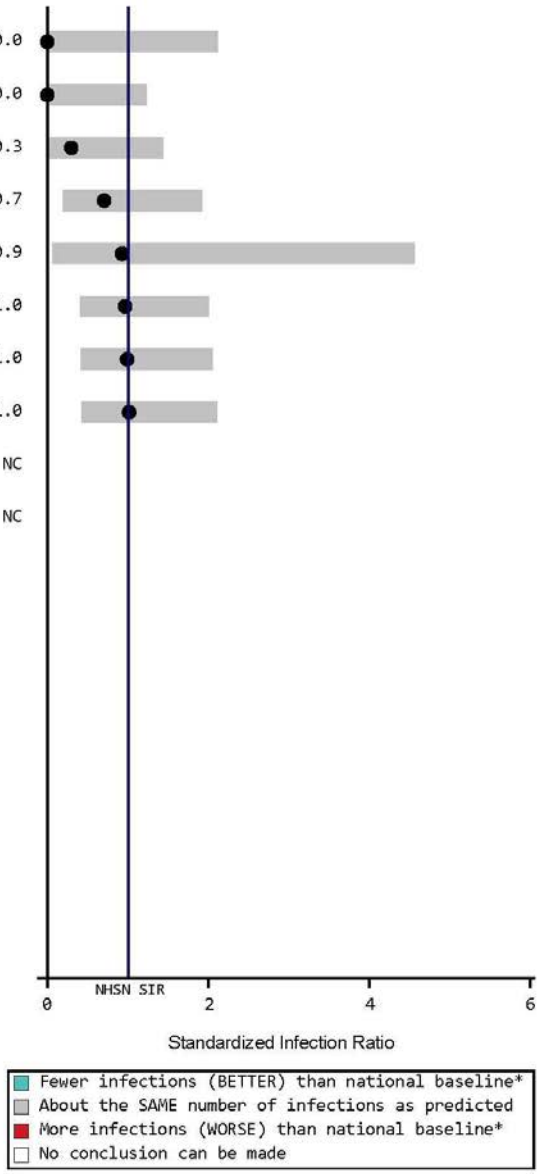
Surgical Site Infections (SSI) - Abdominal Hysterectomies
Standardized Infection Ratios: January 1 – December 31, 2021
Hospital Group: Hospitals with 400 or More Beds

HOSPITAL	OBS	PRED	PROC	SIR
Atrium Health Cabarrus	0	1.4	164	0.0
Cape Fear Valley Health System	0	2.4	254	0.0
Novant Health Forsyth Medical Center	1	3.4	383	0.3
New Hanover Regional Medical Center	3	4.3	503	0.7
WakeMed	1	1.1	121	0.9
Mission Hospital	6	6.2	703	1.0
Rex Healthcare	6	6.1	727	1.0
Novant Health Presbyterian Medical	6	5.9	675	1.0
Gaston Memorial Hospital	2	0.9	96	NC
Moses Cone Hospital	1	0.7	71	NC



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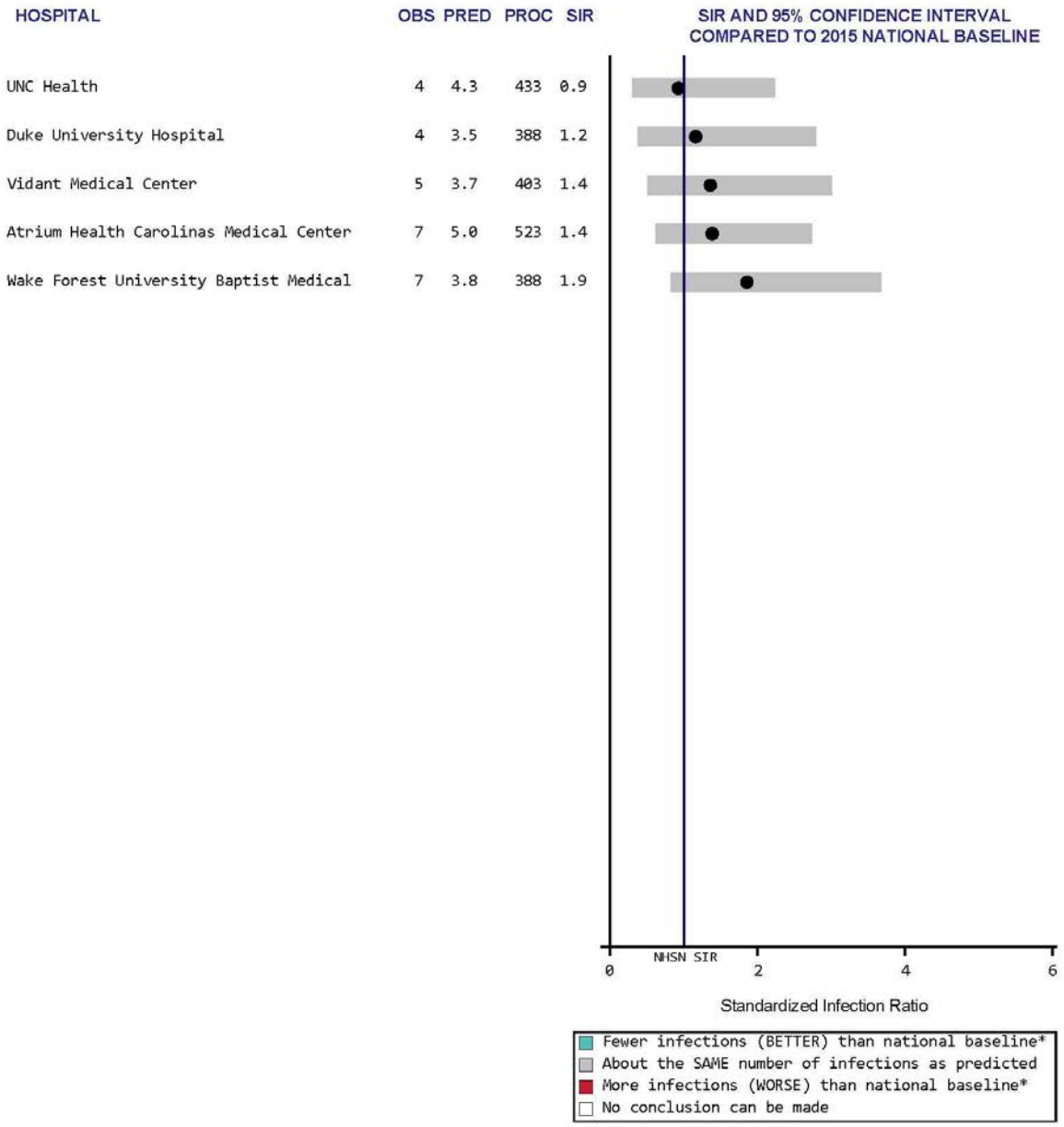
PRED = # infections statistically predicted by national baseline
PROC = # of Procedures
SIR = Standardized infection ratio (OBS/PRED # of infections)
NA = Data not shown for hospitals with <20 procedures
NC = SIR not calculated for hospitals with <1 predicted infection
*Significantly different than 2015 national baseline

Surgical Site Infections (SSI) - Abdominal Hysterectomies
Standardized Infection Ratios: January 1 – December 31, 2021
Hospital Group: Hospitals with Primary Medical School Affiliation

HOSPITAL	OBS	PRED	PROC	SIR
UNC Health	4	4.3	433	0.9
Duke University Hospital	4	3.5	388	1.2
Vidant Medical Center	5	3.7	403	1.4
Atrium Health Carolinas Medical Center	7	5.0	523	1.4
Wake Forest University Baptist Medical	7	3.8	388	1.9



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PROC = # of Procedures
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NA = Data not shown for hospitals with <20 procedures
NC = SIR not calculated for hospitals with <1 predicted infection
*Significantly different than 2015 national baseline

2. Colon Surgeries

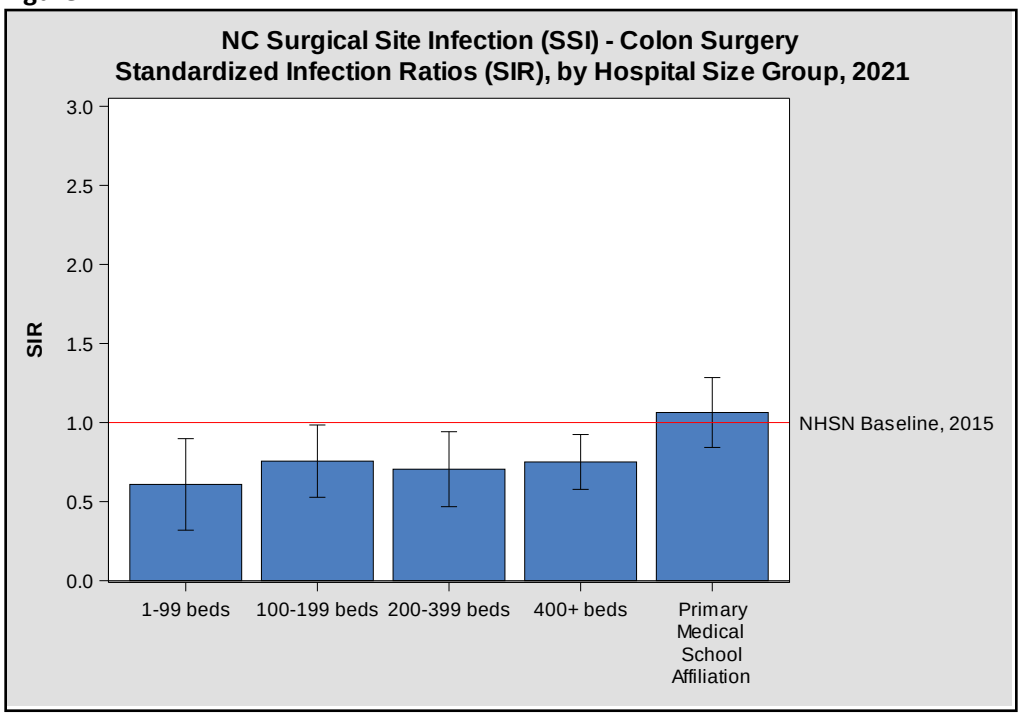
North Carolina 2021 SSI Following Colon Surgery Highlights

- Among inpatient colon surgeries performed on adults ≥ 18 years, North Carolina hospitals reported 254 infections, compared to the 315.78 infections which were predicted; this was better than the 2015 national experience.
- The most commonly identified organisms isolated from colon surgery SSI patients were *Escherichia coli* and *Enterococcus* spp.

Table 5. NC Surgical Site Infections following colon surgeries, 2021

Year	# Observed Infections	# Predicted Infections	How Does North Carolina Compare to the National Experience?
2021	**254**	**315.78**	★ **BETTER: fewer than the number of infections predicted (better than the national experience)**

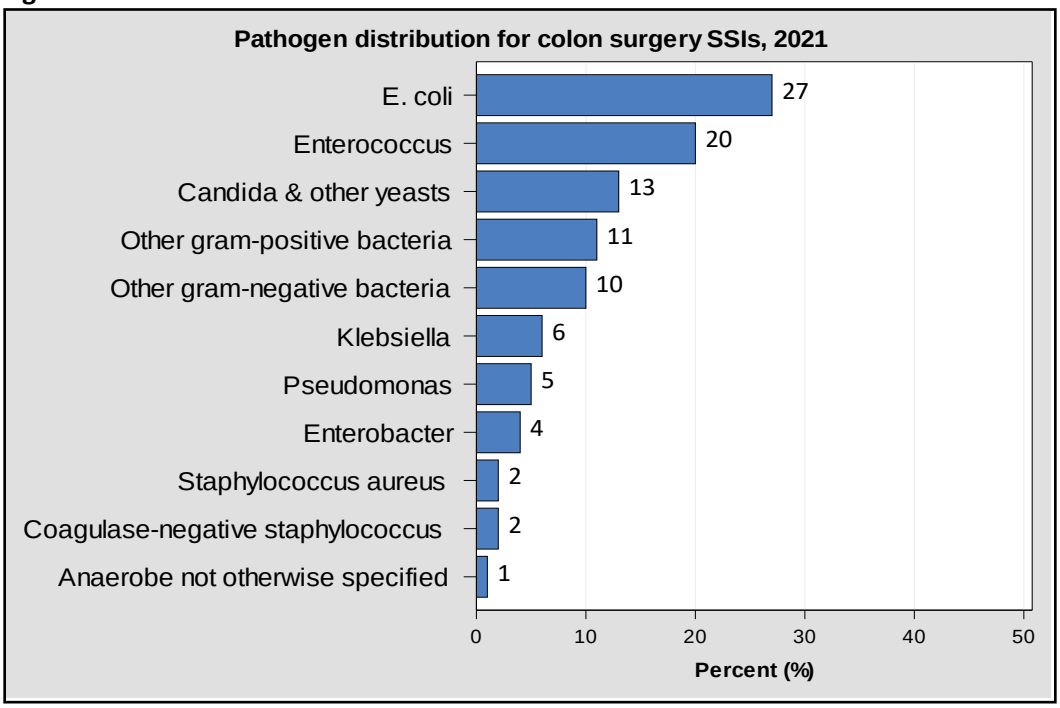
Figure 22.



Interpreting Figure 22:

- In 2021, all hospitals except hospitals with primary medical school affiliation experienced fewer SSIs following colon surgeries than predicted, performing BETTER than the national experience
- Hospitals with primary medical school affiliation experienced the same number of SSIs following colon surgeries as predicted, performing the SAME as the national experience

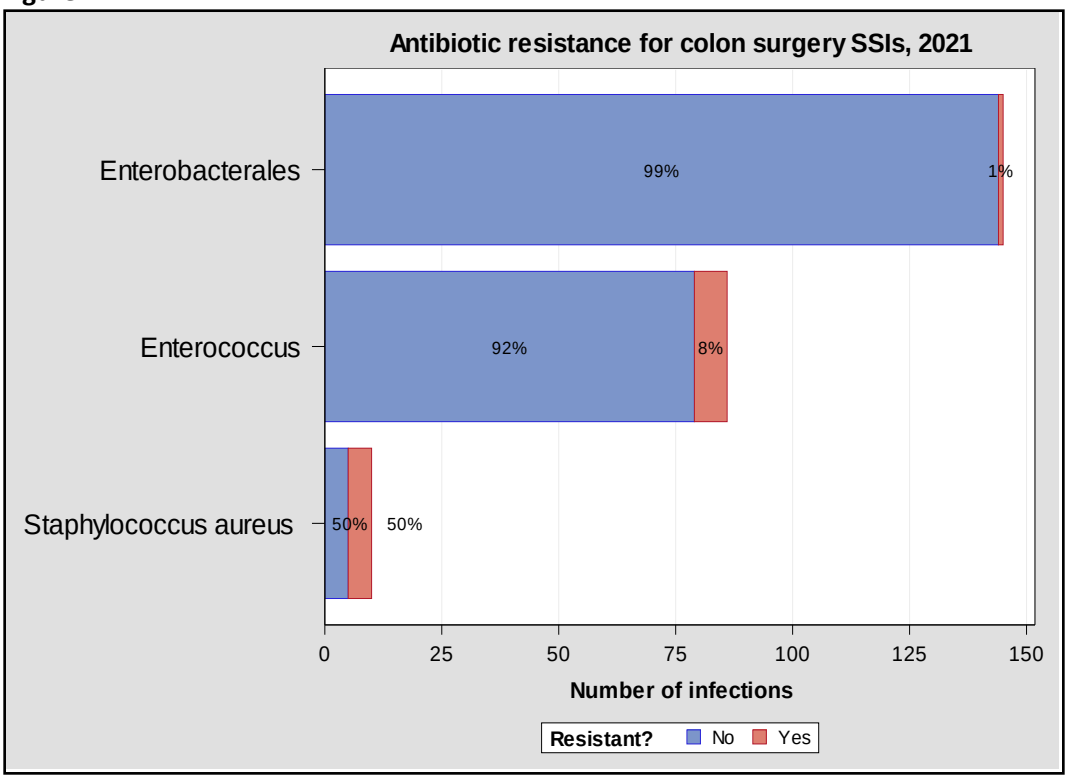
Figure 23.



Interpreting Figure 23:

- The most commonly reported pathogens isolated from patients with surgical site infections following colon surgeries were *Escherichia coli* (27%) followed by *Enterococcus* spp. (20%)

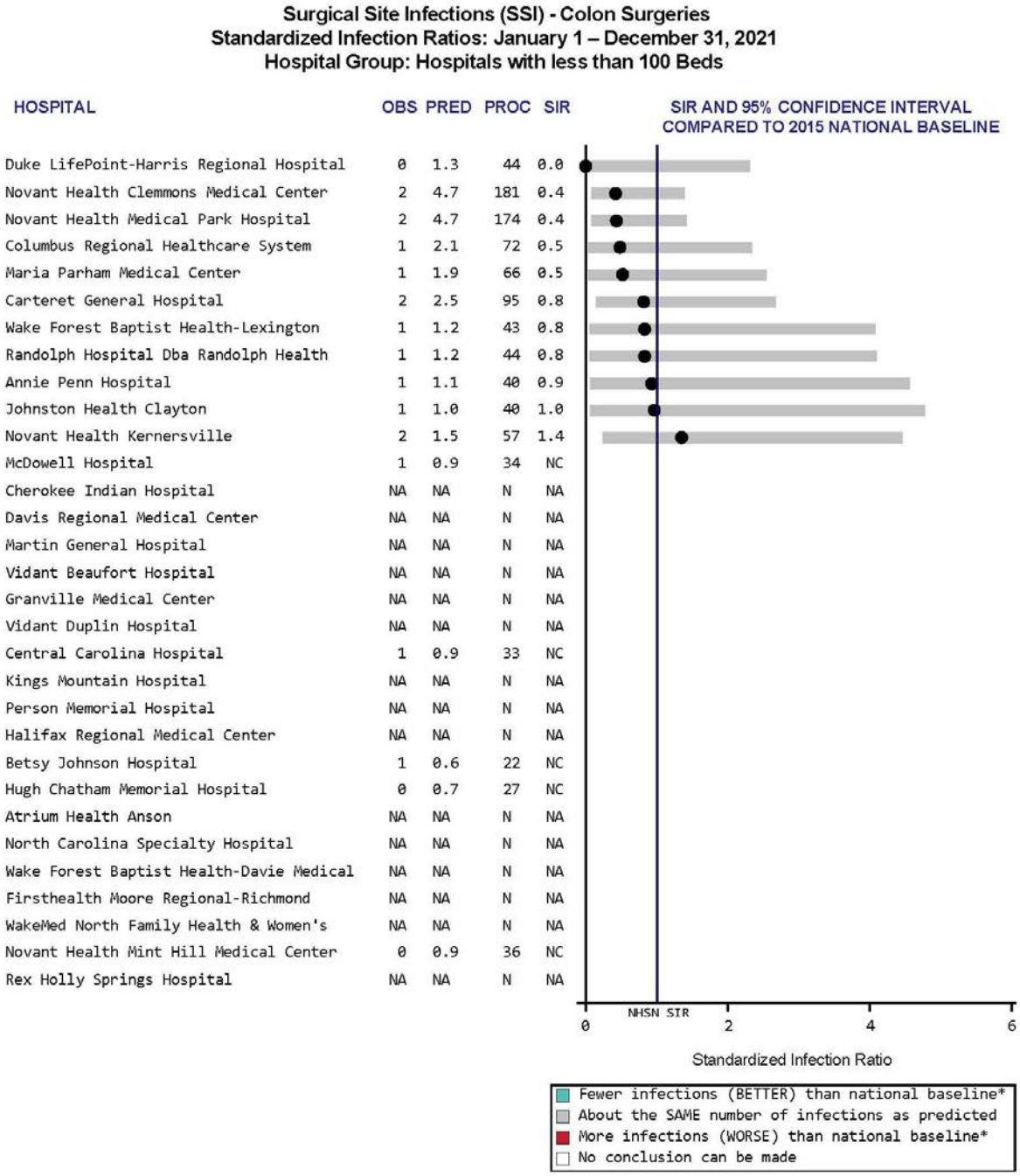
Figure 24.



Interpreting Figure 24:

- In 2021, 50% of *Staphylococcus aureus* identified among SSIs following colon surgeries were resistant to methicillin
- 8% of *Enterococcus* spp. identified among SSIs following colon surgeries were resistant to vancomycin
- Only 1% of Enterobacterales identified among SSIs following colon surgeries were resistant to carbapenems

The following SIR plots summarize SSI following colon surgery infection data for North Carolina hospitals by hospital groups (Appendix D).



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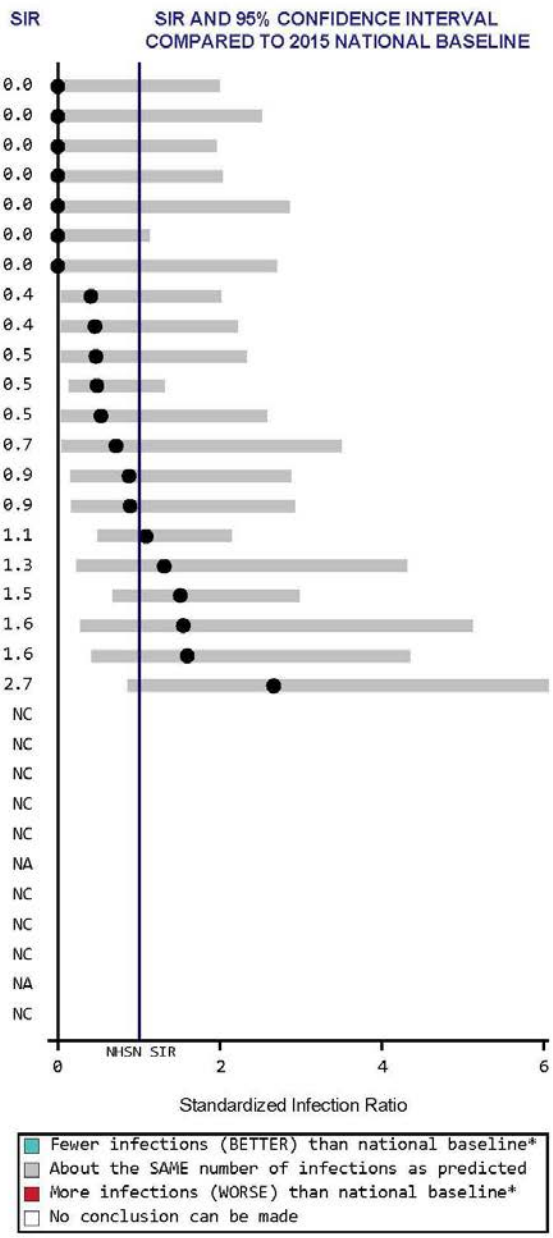
PROC = # of Procedures
SIR = Standardized infection ratio (OBS/PRED # of infections)
NA = Data not shown for hospitals with <20 procedures
NC = SIR not calculated for hospitals with <1 predicted infection
*Significantly different than 2015 national baseline

Surgical Site Infections (SSI) - Colon Surgeries
Standardized Infection Ratios: January 1 – December 31, 2021
Hospital Group: Hospitals with 100 to 199 Beds

HOSPITAL	OBS	PRED	PROC	SIR
Rutherford Regional Medical Center	0	1.5	54	0.0
Advent Health Hendersonville	0	1.2	43	0.0
Sentara Albemarle Medical Center	0	1.5	54	0.0
Frye Regional Medical Center	0	1.5	55	0.0
Scotland Memorial Hospital	0	1.0	39	0.0
Novant Health Brunswick Medical Center	0	2.7	107	0.0
Atrium Health Lincoln	0	1.1	40	0.0
UNC Health Blue Ridge	1	2.5	89	0.4
Atrium Health Union	1	2.2	79	0.4
Atrium Health University City	1	2.1	69	0.5
Wesley Long Hospital	3	6.2	242	0.5
Lenoir Memorial Hospital	1	1.9	66	0.5
Nash Health Care Systems	1	1.4	49	0.7
Pardee Hospital	2	2.3	89	0.9
Iredell Memorial Hospital	2	2.3	83	0.9
Novant Health Huntersville	7	6.5	243	1.1
Onslow Memorial Hospital	2	1.5	56	1.3
Duke Raleigh Hospital	7	4.6	174	1.5
Northern Regional Hospital	2	1.3	50	1.6
Johnston Health	3	1.9	67	1.6
Wilson Medical Center	4	1.5	55	2.7
Haywood Regional Medical Center	1	0.8	32	NC
ARHS-Watauga Medical Center	1	0.9	41	NC
Vidant Roanoke Chowan Hospital	0	0.7	21	NC
Vidant Edgecombe Hospital	1	0.5	20	NC
Novant Health Thomasville Medical Center	1	0.9	38	NC
Sampson Regional Medical Center	NA	NA	N	NA
Lake Norman Regional Medical Center	0	0.9	36	NC
Caldwell Memorial Hospital	0	0.7	28	NC
Atrium Health Stanly	0	0.8	29	NC
UNC Rockingham Health	NA	NA	N	NA
Wake Forest Baptist Health-Wilkes	1	0.5	22	NC



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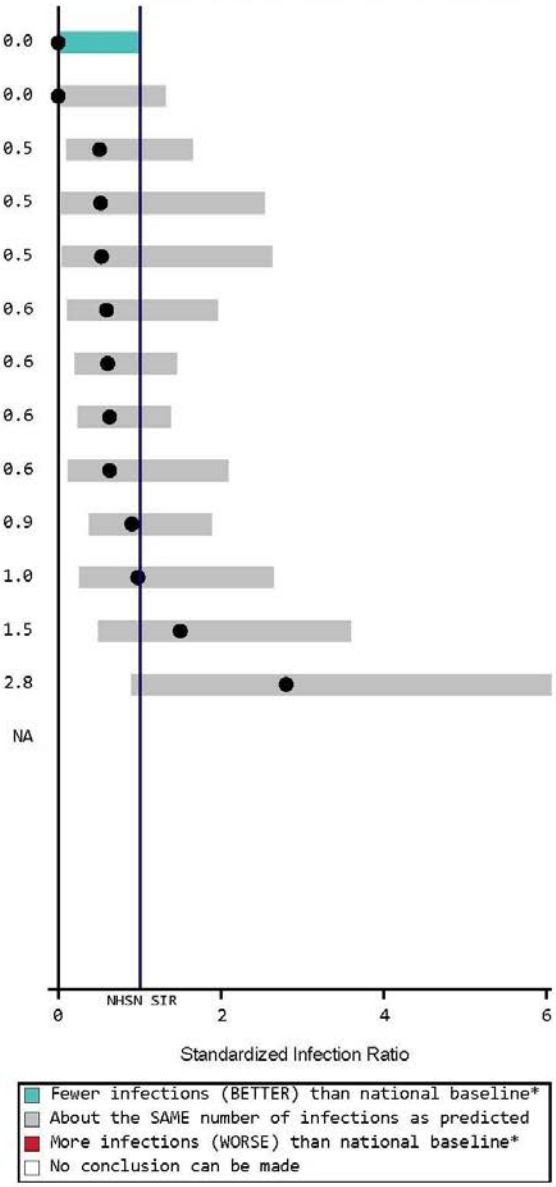
PROC = # of Procedures
SIR = Standardized infection ratio (OBS/PRED # of infections)
NA = Data not shown for hospitals with <20 procedures
NC = SIR not calculated for hospitals with <1 predicted infection
*Significantly different than 2015 national baseline

Surgical Site Infections (SSI) - Colon Surgeries
Standardized Infection Ratios: January 1 – December 31, 2021
Hospital Group: Hospitals with 200 to 399 Beds

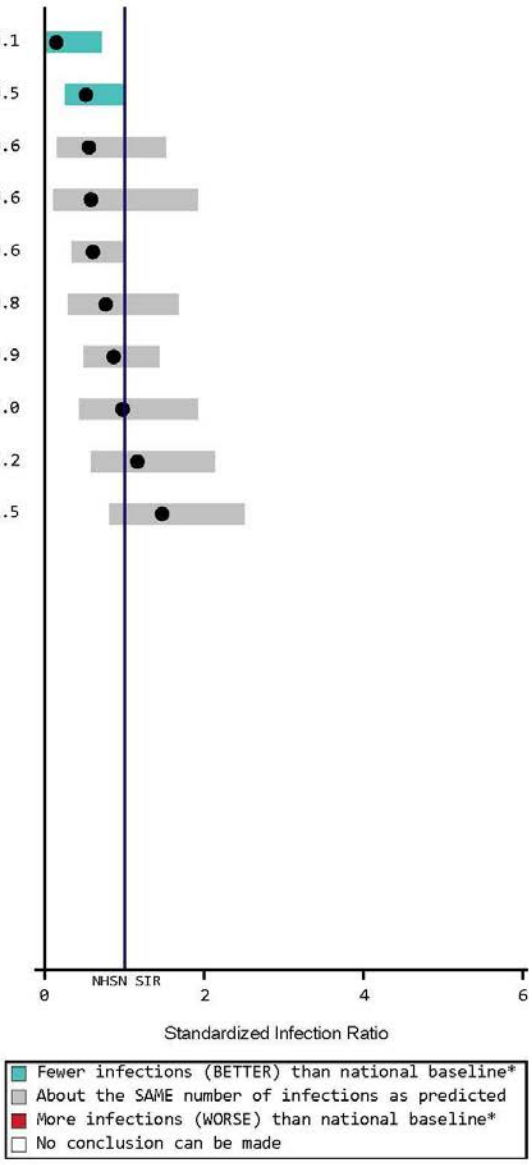
HOSPITAL	OBS	PRED	PROC	SIR
CarolinaEast Medical Center	0	3.1	118	0.0
Catawba Valley Medical Center	0	2.3	87	0.0
FirstHealth Moore Regional Hospital	2	4.0	146	0.5
Wayne Memorial Hospital	1	1.9	70	0.5
Atrium Health Cleveland	1	1.9	68	0.5
High Point Regional Health System	2	3.4	119	0.6
WakeMed Cary Hospital	4	6.6	235	0.6
Atrium Health Pineville	5	8.0	307	0.6
Duke Regional Hospital	2	3.2	120	0.6
Novant Health Matthews Medical Center	6	6.6	248	0.9
Alamance Regional Medical Center	3	3.1	110	1.0
Novant Health Rowan Medical Center	4	2.7	98	1.5
Southeastern Regional Medical Center	4	1.4	50	2.8
Atrium Health Mercy	NA	NA	N	NA



Data reported as of June 2, 2022.
OBS = # infections observed
PRED = # infections statistically predicted by national baseline
PROC = # of Procedures
SIR = Standardized infection ratio (OBS/PRED # of infections)
NA = Data not shown for hospitals with <20 procedures
NC = SIR not calculated for hospitals with <1 predicted infection
*Significantly different than 2015 national baseline

Surgical Site Infections (SSI) - Colon Surgeries
Standardized Infection Ratios: January 1 – December 31, 2021
Hospital Group: Hospitals with 400 or More Beds

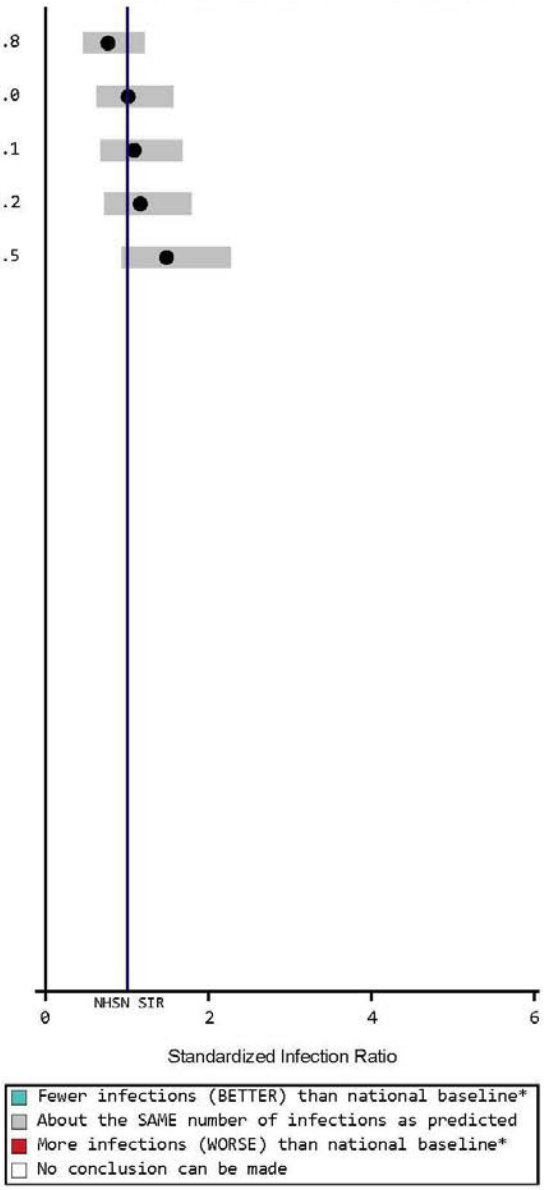
HOSPITAL	OBS	PRED	PROC	SIR
Novant Health Forsyth Medical Center	1	6.9	243	0.1
New Hanover Regional Medical Center	8	15.4	549	0.5
Gaston Memorial Hospital	3	5.4	192	0.6
Moses Cone Hospital	2	3.4	109	0.6
Rex Healthcare	12	20.0	722	0.6
Cape Fear Valley Health System	5	6.6	227	0.8
Mission Hospital	13	15.1	538	0.9
Novant Health Presbyterian Medical	7	7.2	261	1.0
WakeMed	9	7.8	256	1.2
Atrium Health Cabarrus	12	8.1	294	1.5



Data reported as of June 2, 2022.
OBS = # infections observed
PRED = # infections statistically predicted by national baseline
PROC = # of Procedures
SIR = Standardized infection ratio (OBS/PRED # of infections)
NA = Data not shown for hospitals with <20 procedures
NC = SIR not calculated for hospitals with <1 predicted infection
*Significantly different than 2015 national baseline

Surgical Site Infections (SSI) - Colon Surgeries
Standardized Infection Ratios: January 1 – December 31, 2021
Hospital Group: Hospitals with Primary Medical School Affiliation

HOSPITAL	OBS	PRED	PROC	SIR
Duke University Hospital	16	20.9	698	0.8
UNC Health	18	17.8	564	1.0
Atrium Health Carolinas Medical Center	18	16.6	536	1.1
Wake Forest University Baptist Medical	18	15.6	504	1.2
Vidant Medical Center	19	12.8	411	1.5



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PRED = # infections statistically predicted by national baseline
PROC = # of Procedures
SIR = Standardized infection ratio (OBS/PRED # of infections)
NA = Data not shown for hospitals with <20 procedures
NC = SIR not calculated for hospitals with <1 predicted infection
*Significantly different than 2015 national baseline

D. Laboratory-Identified Events

1. Methicillin-Resistant *Staphylococcus aureus* Laboratory-Identified Events (MRSA LabID)

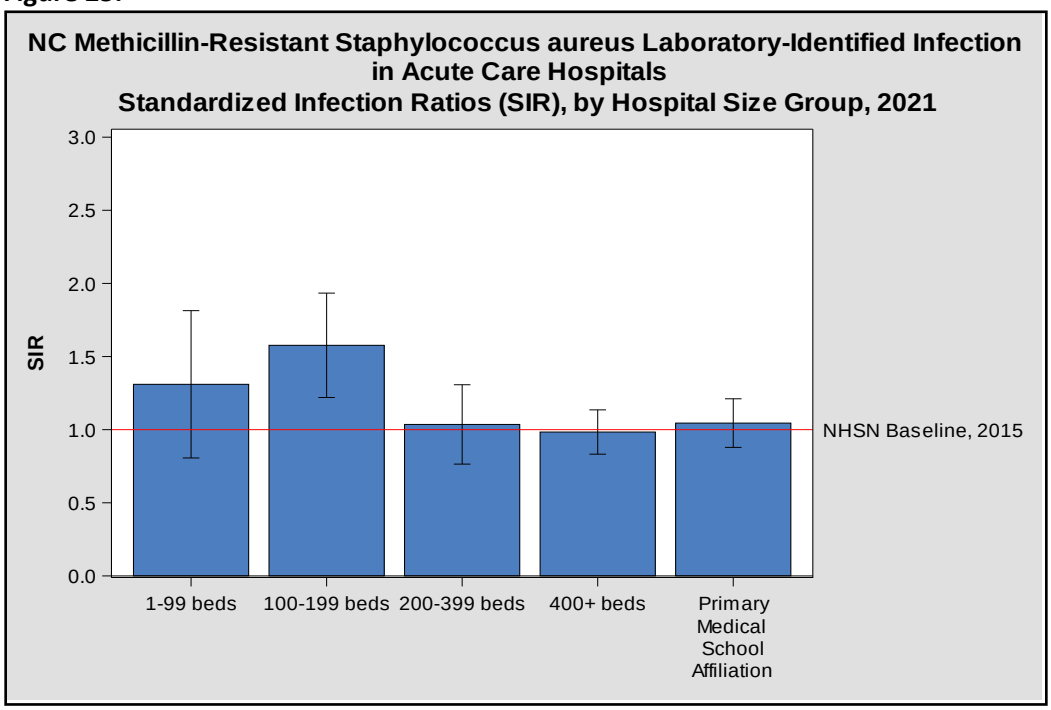
North Carolina 2021 MRSA LabID Highlights

- In 2021 North Carolina hospitals reported 471 MRSA LabID events, compared to the 431.58 MRSA LabID events which were predicted. This is the same as the 2015 national experience.

Table 6. NC Methicillin-Resistant *Staphylococcus aureus* Laboratory-Identified Events, 2021

Year	# Observed Events	# Predicted Events	How Does North Carolina Compare to the National Experience?
2021	471	431.58	= SAME: about the same number of infections as predicted (same as the national experience)

Figure 25.



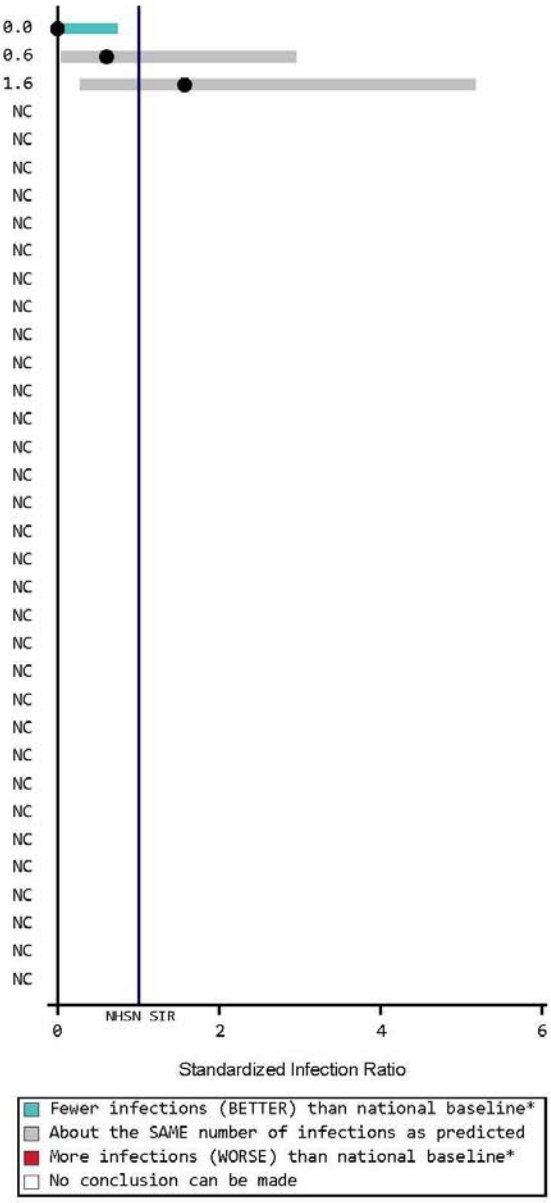
Interpreting Figure 25:

- All hospitals except hospitals with 100-199 beds performed the SAME as the national experience, with about the same number of MRSA LabID events as predicted
- Hospitals with 100-199 beds size groups reported more events as predicted, performing WORSE than the 2015 national experience

The following SIR plots summarize MRSA LabID data for North Carolina hospitals by hospital groups (Appendix D).

Methicillin-Resistant Staphylococcus aureus (MRSA) LabID Events
Standardized Infection Ratios: January 1 – December 31, 2021
Hospital Group: Hospitals with less than 100 Beds

HOSPITAL	OBS	PRED	PD	SIR
Annie Penn Hospital	0	4.1	67574	0.0
Halifax Regional Medical Center	1	1.7	27074	0.6
Columbus Regional Healthcare System	2	1.3	22733	1.6
McDowell Hospital	1	0.3	8718	NC
Cherokee Indian Hospital	0	0.1	4359	NC
Duke LifePoint-Harris Regional Hospital	0	0.4	12704	NC
Davis Regional Medical Center	1	0.6	12927	NC
Martin General Hospital	0	0.1	4303	NC
Maria Parham Medical Center	0	0.7	16362	NC
Randolph Hospital Dba Randolph Health	0	0.9	19284	NC
Vidant Beaufort Hospital	0	0.5	11873	NC
Granville Medical Center	0	0.2	9425	NC
Carteret General Hospital	2	0.9	28072	NC
Vidant Duplin Hospital	2	0.6	12989	NC
Central Carolina Hospital	2	0.7	13922	NC
Kings Mountain Hospital	2	0.3	8089	NC
Person Memorial Hospital	0	0.1	3849	NC
Wake Forest Baptist Health-Lexington	5	0.9	15815	NC
Novant Health Charlotte Orthopedic	2	0.2	12911	NC
Novant Health Medical Park Hospital	0	0.1	4444	NC
Betsy Johnson Hospital	0	0.6	17078	NC
Hugh Chatham Memorial Hospital	0	0.6	18243	NC
Atrium Health Anson	0	0.1	1864	NC
North Carolina Specialty Hospital	0	0.1	3687	NC
Wake Forest Baptist Health-Davie Medical	0	0.2	8637	NC
Johnston Health Clayton	1	0.5	15346	NC
Firsthealth Moore Regional-Hoke	0	0.0	2112	NC
Firsthealth Moore Regional-Richmond	1	0.6	10519	NC
Cape Fear Valley Hoke Hospital	0	0.1	5384	NC
Novant Health Kernersville	2	0.6	17822	NC
WakeMed North Family Health & Women's	0	0.5	21104	NC
Central Harnett Hospital	1	0.5	9251	NC
Novant Health Clemmons Medical Center	0	0.2	7838	NC
Novant Health Mint Hill Medical Center	1	0.6	14261	NC
Rex Holly Springs Hospital	0	0.0	1113	NC



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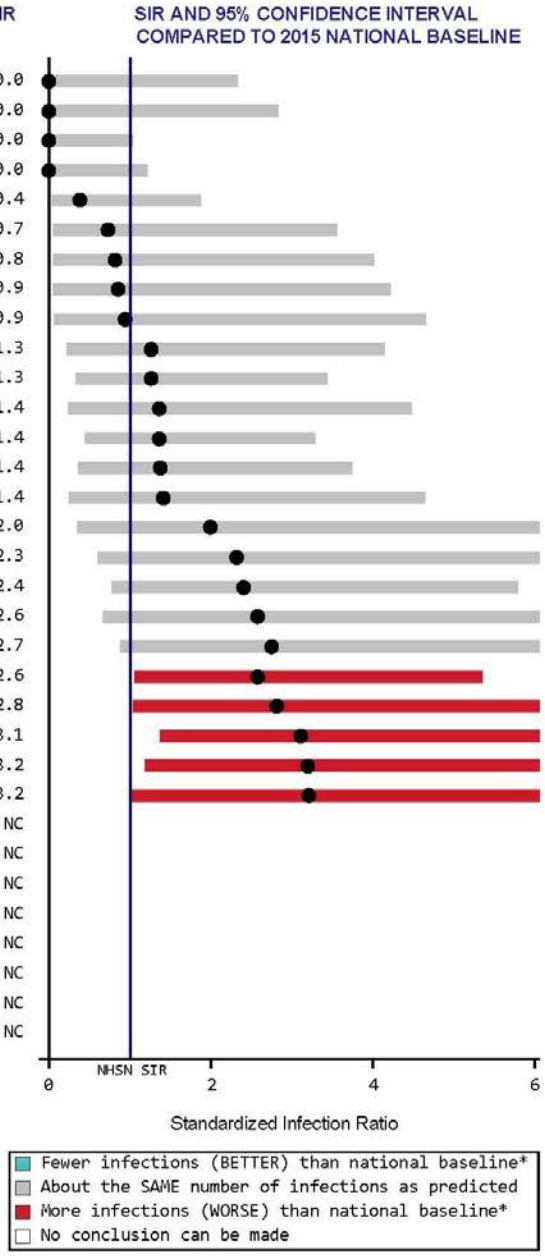
PRED = # infections statistically predicted by national baseline
PD = # Patient Days
SIR = Standardized infection ratio (OBS/PRED # of infections)
NC = SIR not calculated for hospitals with <1 predicted infection
*Significantly different than 2015 national baseline

Methicillin-Resistant Staphylococcus aureus (MRSA) LabID Events
Standardized Infection Ratios: January 1 – December 31, 2021
Hospital Group: Hospitals with 100 to 199 Beds

HOSPITAL	OBS	PRED	PD	SIR
ARHS-Watauga Medical Center	0	1.3	21195	0.0
Novant Health Thomasville Medical Center	0	1.1	18369	0.0
Johnston Health	0	2.9	43390	0.0
UNC Health Blue Ridge	0	2.5	30551	0.0
Wesley Long Hospital	1	2.6	44330	0.4
Atrium Health University City	1	1.4	37096	0.7
Atrium Health Lincoln	1	1.2	24683	0.8
Wilson Medical Center	1	1.2	33883	0.9
Pardee Hospital	1	1.1	34444	0.9
Caldwell Memorial Hospital	2	1.6	25010	1.3
Nash Health Care Systems	3	2.4	49066	1.3
Haywood Regional Medical Center	2	1.5	19272	1.4
Duke Raleigh Hospital	4	2.9	56952	1.4
Novant Health Huntersville	3	2.2	44304	1.4
Vidant Roanoke Chowan Hospital	2	1.4	24005	1.4
Atrium Health Stanly	2	1.0	17390	2.0
Northern Regional Hospital	3	1.3	22326	2.3
Onslow Memorial Hospital	4	1.7	31160	2.4
Wake Forest Baptist Health-Wilkes	3	1.2	17444	2.6
Iredell Memorial Hospital	4	1.5	41827	2.7
Frye Regional Medical Center	6	2.3	35678	2.6
Lenoir Memorial Hospital	5	1.8	31272	2.8
Atrium Health Union	7	2.3	45240	3.1
Scotland Memorial Hospital	5	1.6	32340	3.2
Sentara Albemarle Medical Center	4	1.2	20163	3.2
Rutherford Regional Medical Center	1	0.6	12217	NC
Advent Health Hendersonville	1	0.4	12187	NC
Vidant Edgecombe Hospital	1	0.9	14011	NC
Sampson Regional Medical Center	1	0.6	11300	NC
Lake Norman Regional Medical Center	5	0.6	15408	NC
Novant Health Brunswick Medical Center	1	0.9	24004	NC
UNC Rockingham Health	0	0.6	11662	NC
Cone Green Valley	1	0.1	2824	NC



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SIR = Standardized infection ratio (OBS/PRED # of infections)
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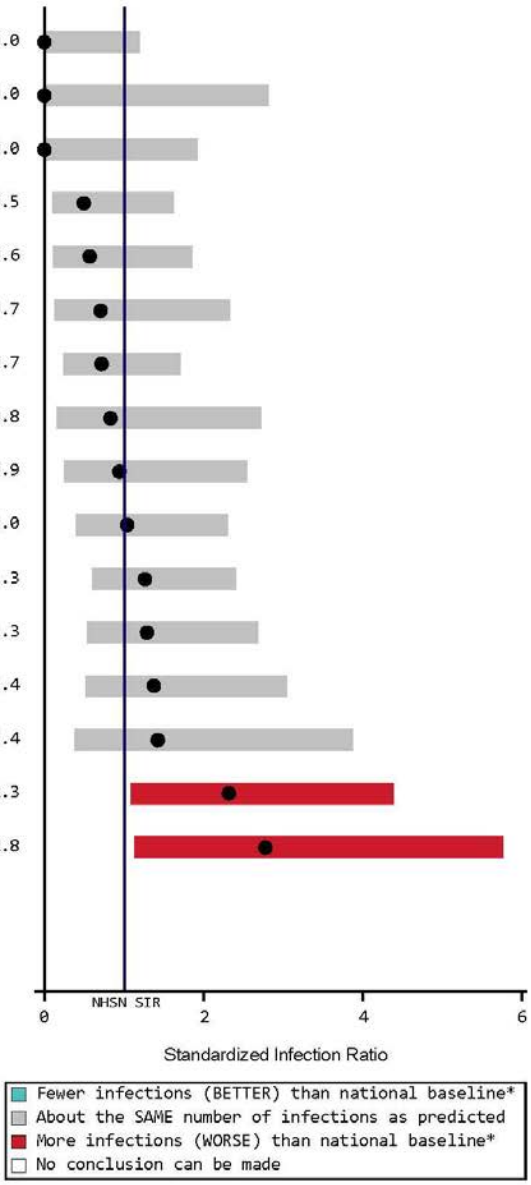
*Significantly different than 2015 national baseline

Methicillin-Resistant Staphylococcus aureus (MRSA) LabID Events
Standardized Infection Ratios: January 1 – December 31, 2021
Hospital Group: Hospitals with 200 to 399 Beds

HOSPITAL	OBS	PRED	PD	SIR
Alamance Regional Medical Center	0	2.5	48772	0.0
Cherry Hospital	0	1.1	70294	0.0
Broughton Hospital	0	1.6	79667	0.0
Atrium Health Mercy	2	4.1	58261	0.5
Novant Health Rowan Medical Center	2	3.6	51228	0.6
Wayne Memorial Hospital	2	2.8	49187	0.7
Duke Regional Hospital	4	5.6	87986	0.7
Novant Health Matthews Medical Center	2	2.4	57373	0.8
CarolinaEast Medical Center	3	3.2	65957	0.9
Southeastern Regional Medical Center	5	4.8	70376	1.0
FirstHealth Moore Regional Hospital	8	6.3	94762	1.3
Atrium Health Pineville	6	4.7	82232	1.3
High Point Regional Health System	5	3.6	63587	1.4
WakeMed Cary Hospital	3	2.1	59675	1.4
Atrium Health Cleveland	8	3.5	53903	2.3
Catawba Valley Medical Center	6	2.2	57333	2.8



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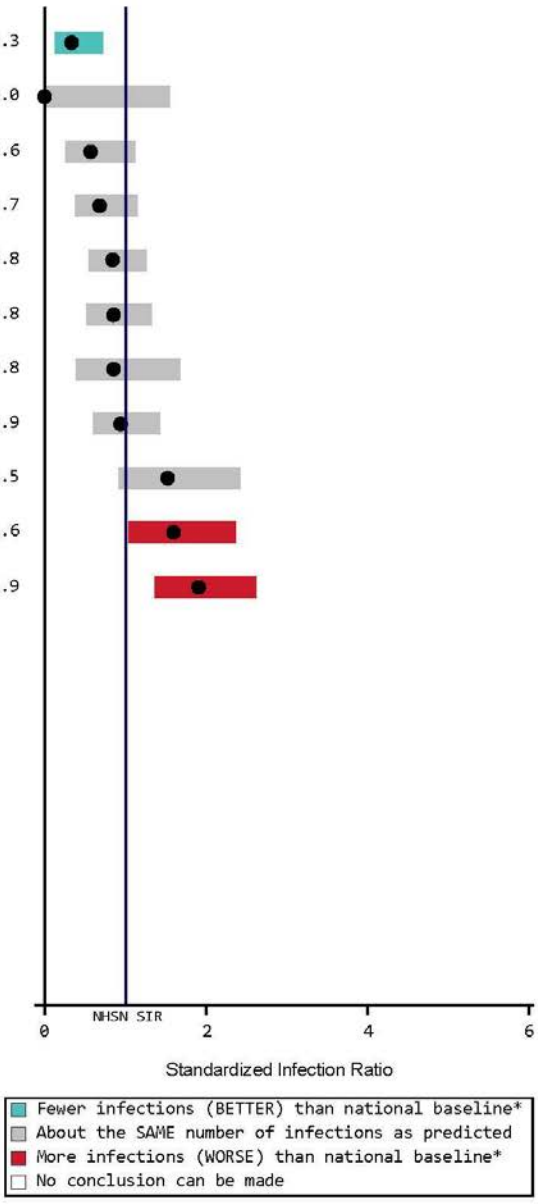
PD = # Patient Days
SIR = Standardized infection ratio (OBS/PRED # of infections)
NC = SIR not calculated for hospitals with <1 predicted infection
*Significantly different than 2015 national baseline

Methicillin-Resistant Staphylococcus aureus (MRSA) LabID Events
Standardized Infection Ratios: January 1 – December 31, 2021
Hospital Group: Hospitals with 400 or More Beds

HOSPITAL	OBS	PRED	PD	SIR
Moses Cone Hospital	5	15.3	166521	0.3
Central Regional Hospital	0	1.9	113739	0.0
Atrium Health Cabarrus	7	12.3	138300	0.6
Rex Healthcare	12	17.7	162925	0.7
Novant Health Forsyth Medical Center	21	25.0	229734	0.8
WakeMed	17	20.1	200514	0.8
Gaston Memorial Hospital	7	8.3	125433	0.8
Mission Hospital	20	21.2	234477	0.9
Cape Fear Valley Health System	16	10.5	166986	1.5
Novant Health Presbyterian Medical	22	13.8	176979	1.6
New Hanover Regional Medical Center	35	18.4	200272	1.9



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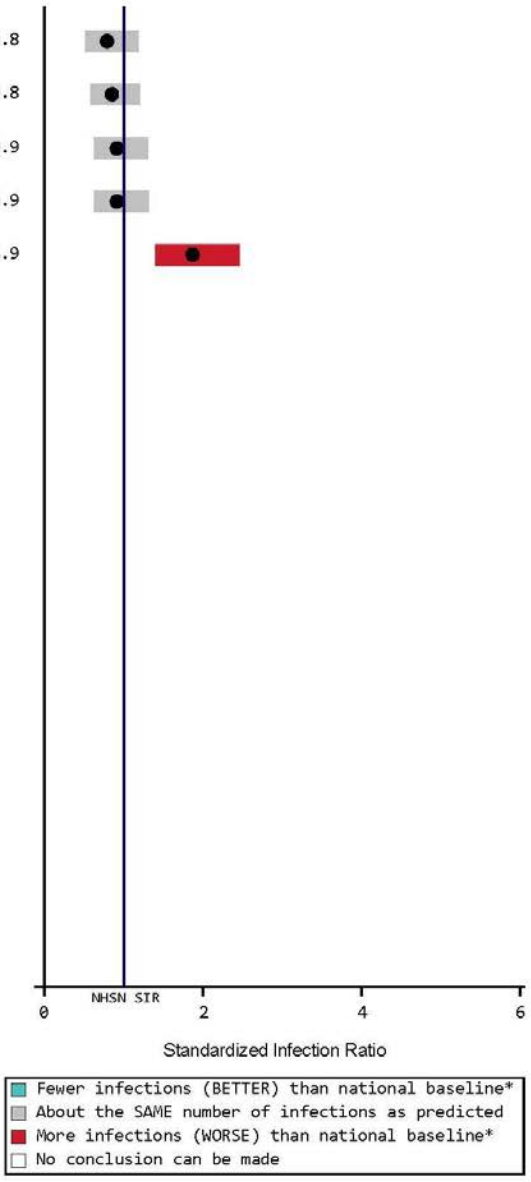
PRED = # infections statistically predicted by national baseline
PD = # Patient Days
SIR = Standardized infection ratio (OBS/PRED # of infections)
NC = SIR not calculated for hospitals with <1 predicted infection
*Significantly different than 2015 national baseline

Methicillin-Resistant Staphylococcus aureus (MRSA) LabID Events
Standardized Infection Ratios: January 1 – December 31, 2021
Hospital Group: Hospitals with Primary Medical School Affiliation

HOSPITAL	OBS	PRED	PD	SIR
Vidant Medical Center	21	26.6	244536	0.8
Duke University Hospital	28	33.1	328543	0.8
Atrium Health Carolinas Medical Center	28	30.6	324290	0.9
UNC Health	27	29.4	270354	0.9
Wake Forest University Baptist Medical	48	25.7	235993	1.9



Data reported as of June 2, 2022.
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PD = # Patient Days
SIR = Standardized infection ratio (OBS/PRED # of infections)
NC = SIR not calculated for hospitals with <1 predicted infection
*Significantly different than 2015 national baseline

3. *Clostridioides difficile* Laboratory-Identified Events (CDI LabID)

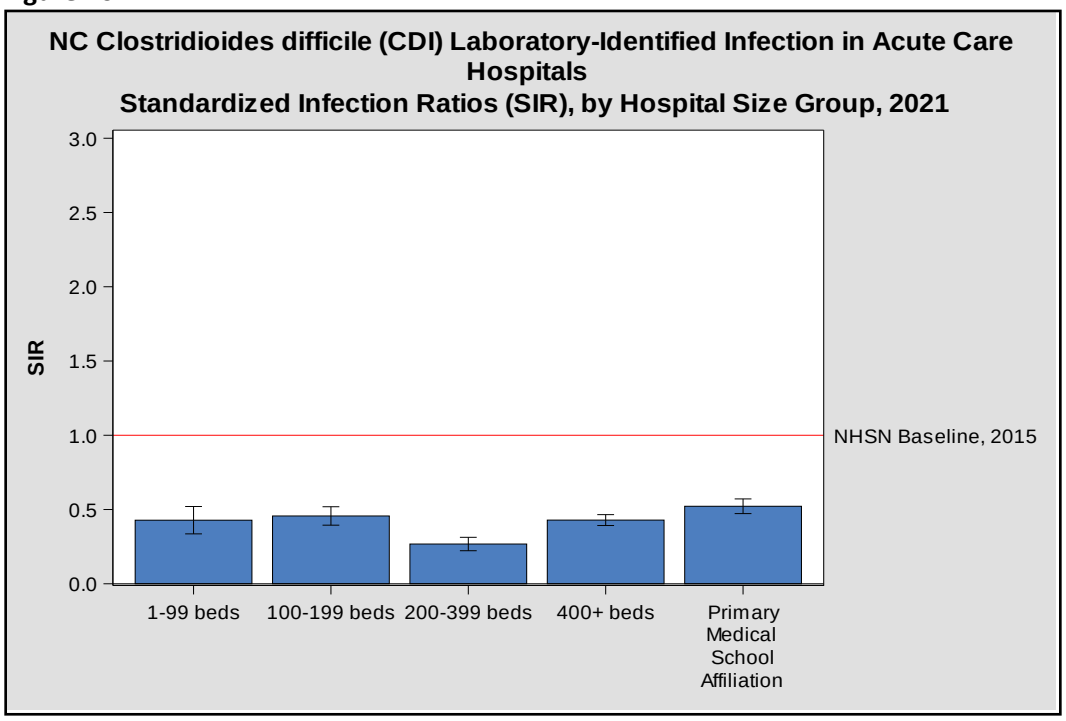
North Carolina 2021 CDI LabID Highlights

- In 2021, North Carolina hospitals reported 1,380 CDI LabID events, compared to the 3,199.9 CDI LabID events which were predicted. This was better than the 2015 national experience.

Table 7. NC *Clostridioides difficile* Laboratory-Identified Events, 2021

Year	# Observed Infections	# Predicted Infections	How Does North Carolina Compare to the National Experience?
2021	1,380	3,199.9	★BETTER: Fewer infections than were predicted (better than the national experience)

Figure 26.



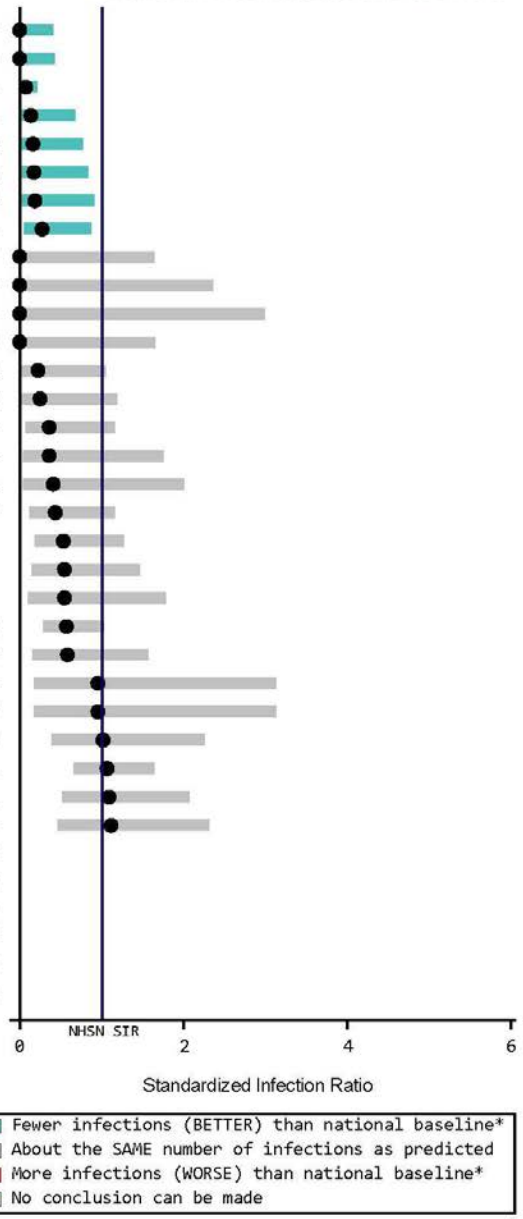
Interpreting Figure 26:

- All hospital size groups performed BETTER than the national experience, with fewer LabID CDI events than predicted

The following SIR plots summarize CDI LabID data for North Carolina hospitals by hospital groups (Appendix D)

Clostridioides difficile infection (CDI) LabID Events
Standardized Infection Ratios: January 1 – December 31, 2021
Hospital Group: Hospitals with less than 100 Beds

HOSPITAL	OBS	PRED	PD	SIR
Randolph Hospital Dba Randolph Health	0	7.5	18407	0.0
Novant Health Mint Hill Medical Center	0	7.2	13125	0.0
Annie Penn Hospital	2	31.9	67574	0.1
Novant Health Kernersville	1	7.4	17822	0.1
Maria Parham Medical Center	1	6.5	15696	0.2
Firsthealth Moore Regional-Richmond	1	5.9	10519	0.2
Johnston Health Clayton	1	5.4	13442	0.2
Halifax Regional Medical Center	2	7.6	26249	0.3
Martin General Hospital	0	1.8	4303	0.0
Person Memorial Hospital	0	1.3	3849	0.0
Novant Health Medical Park Hospital	0	1.0	4444	0.0
Wake Forest Baptist Health-Davie Medical	0	1.8	8637	0.0
Central Harnett Hospital	1	4.7	9251	0.2
Vidant Beaufort Hospital	1	4.2	11474	0.2
Wake Forest Baptist Health-Lexington	2	5.7	15815	0.3
McDowell Hospital	1	2.8	8072	0.4
Kings Mountain Hospital	1	2.5	8089	0.4
Duke LifePoint-Harris Regional Hospital	3	7.1	12704	0.4
Carteret General Hospital	4	7.6	26533	0.5
Central Carolina Hospital	3	5.6	13616	0.5
WakeMed North Family Health & Women's	2	3.7	16249	0.5
Columbus Regional Healthcare System	9	16.1	22114	0.6
Granville Medical Center	3	5.2	9046	0.6
Novant Health Charlotte Orthopedic	2	2.1	12911	0.9
Novant Health Clemmons Medical Center	2	2.1	7838	0.9
Vidant Duplin Hospital	5	4.9	12070	1.0
Hugh Chatham Memorial Hospital	18	17.1	17416	1.1
Betsy Johnson Hospital	8	7.4	15823	1.1
Davis Regional Medical Center	6	5.4	12927	1.1
Cherokee Indian Hospital	3	0.8	4359	NC
Atrium Health Anson	0	0.5	1864	NC
North Carolina Specialty Hospital	0	0.8	3687	NC
Firsthealth Moore Regional-Hoke	1	0.9	2112	NC
Cape Fear Valley Hoke Hospital	0	0.9	5384	NC
Rex Holly Springs Hospital	0	0.5	1113	NC



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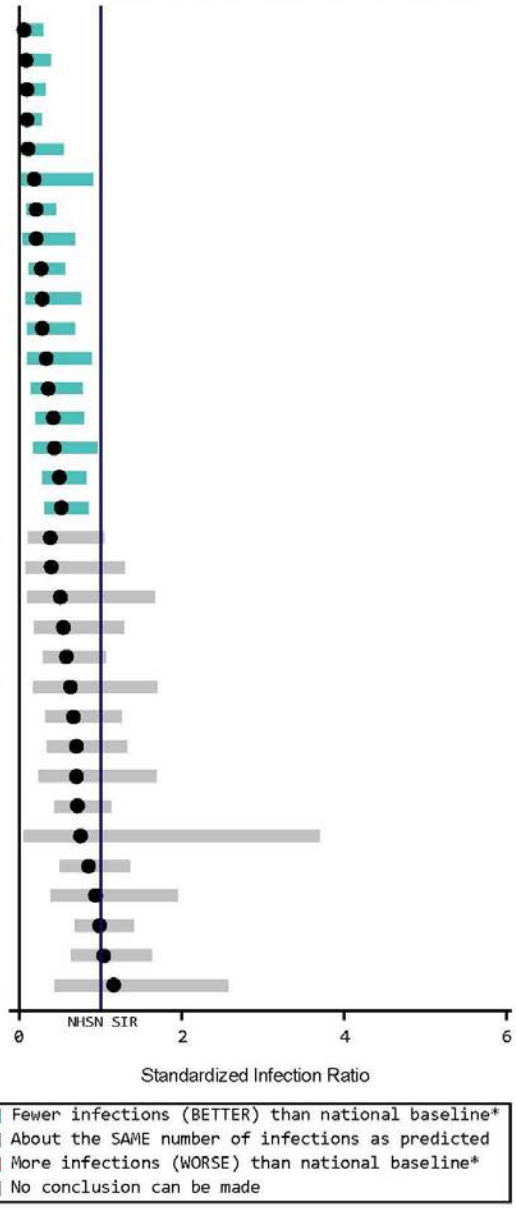
*Significantly different than 2015 national baseline

Clostridioides difficile infection (CDI) LabID Events
Standardized Infection Ratios: January 1 – December 31, 2021
Hospital Group: Hospitals with 100 to 199 Beds

HOSPITAL	OBS	PRED	PD	SIR
Atrium Health University City	1	17.1	32268	0.1
Novant Health Brunswick Medical Center	1	12.9	23038	0.1
Novant Health Huntersville	2	20.6	39558	0.1
Wesley Long Hospital	3	30.4	44330	0.1
Haywood Regional Medical Center	1	9.2	18829	0.1
Rutherford Regional Medical Center	1	5.4	11979	0.2
Duke Raleigh Hospital	5	24.5	56952	0.2
Vidant Roanoke Chowan Hospital	2	9.7	23450	0.2
Atrium Health Union	6	22.3	42839	0.3
Novant Health Thomasville Medical Center	3	10.7	17198	0.3
Atrium Health Lincoln	4	14.1	23805	0.3
Atrium Health Stanly	3	9.2	16625	0.3
Sentara Albemarle Medical Center	5	14.2	19602	0.4
UNC Health Blue Ridge	8	19.2	26416	0.4
Pardee Hospital	5	11.6	34444	0.4
Johnston Health	13	26.4	41599	0.5
Nash Health Care Systems	14	26.9	45404	0.5
ARHS-Watauga Medical Center	3	7.8	20523	0.4
Sampson Regional Medical Center	2	5.1	10535	0.4
Advent Health Hendersonville	2	4.0	10777	0.5
Lake Norman Regional Medical Center	4	7.5	14130	0.5
Northern Regional Hospital	9	15.5	21760	0.6
UNC Rockingham Health	3	4.8	10858	0.6
Lenoir Memorial Hospital	8	12.1	30474	0.7
Caldwell Memorial Hospital	8	11.5	24638	0.7
Wake Forest Baptist Health-Wilkes	4	5.7	17007	0.7
Frye Regional Medical Center	16	22.5	34911	0.7
Cone Green Valley	1	1.3	2824	0.8
Scotland Memorial Hospital	15	17.7	30050	0.8
Wilson Medical Center	6	6.4	32565	0.9
Iredell Memorial Hospital	28	28.4	40520	1.0
Onslow Memorial Hospital	17	16.4	27888	1.0
Vidant Edgecombe Hospital	5	4.3	13019	1.2



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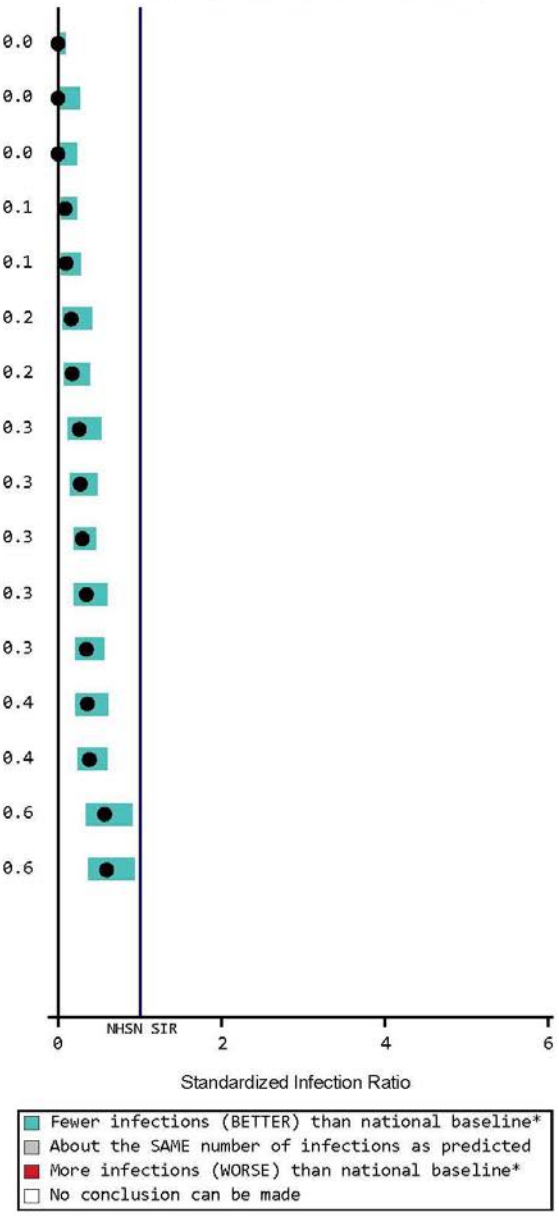
NC = SIR not calculated for hospitals with <1 predicted infection
*Significantly different than 2015 national baseline

Clostridioides difficile infection (CDI) LabID Events
Standardized Infection Ratios: January 1 – December 31, 2021
Hospital Group: Hospitals with 200 to 399 Beds

HOSPITAL	OBS	PRED	PD	SIR
Novant Health Rowan Medical Center	0	33.9	49722	0.0
Cherry Hospital	0	11.3	70294	0.0
Broughton Hospital	0	13.2	79667	0.0
Atrium Health Mercy	3	36.0	58261	0.1
Alamance Regional Medical Center	3	29.9	46896	0.1
Catawba Valley Medical Center	3	19.7	54992	0.2
Atrium Health Cleveland	5	29.1	50782	0.2
WakeMed Cary Hospital	6	23.7	51667	0.3
Novant Health Matthews Medical Center	10	37.1	51340	0.3
FirstHealth Moore Regional Hospital	18	61.3	88742	0.3
CarolinaEast Medical Center	11	32.0	63554	0.3
Southeastern Regional Medical Center	15	43.4	67178	0.3
Duke Regional Hospital	12	33.6	78441	0.4
Atrium Health Pineville	17	44.8	75097	0.4
High Point Regional Health System	15	26.8	61353	0.6
Wayne Memorial Hospital	17	28.5	46613	0.6



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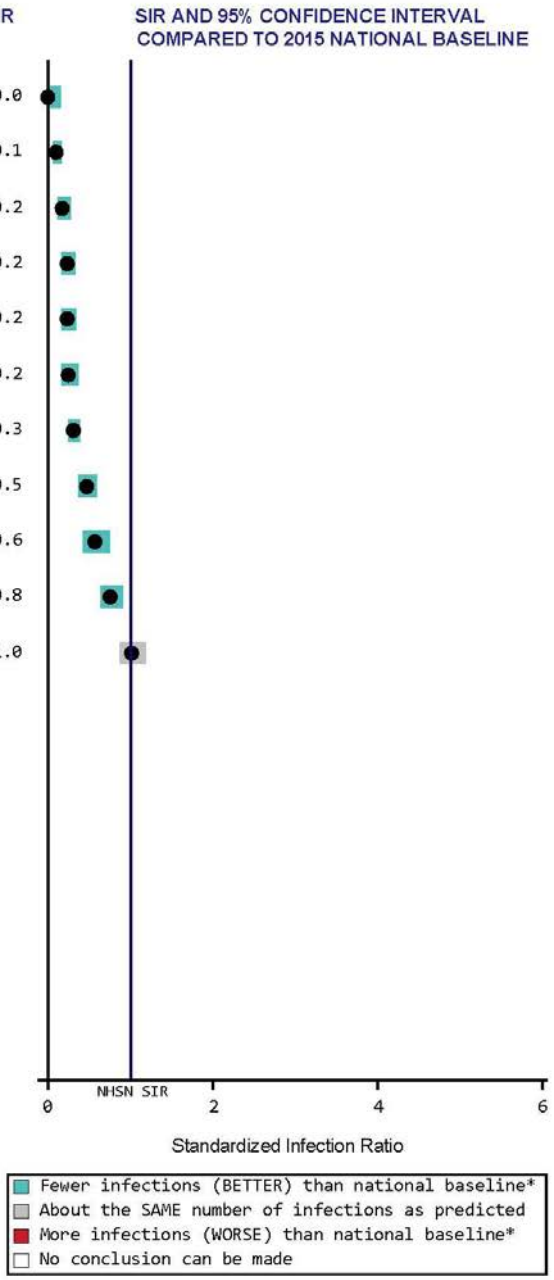
PD = # Patient Days
SIR = Standardized infection ratio (OBS/PRED # of infections)
NC = SIR not calculated for hospitals with <1 predicted infection
*Significantly different than 2015 national baseline

Clostridioides difficile infection (CDI) LabID Events
Standardized Infection Ratios: January 1 – December 31, 2021
Hospital Group: Hospitals with 400 or More Beds

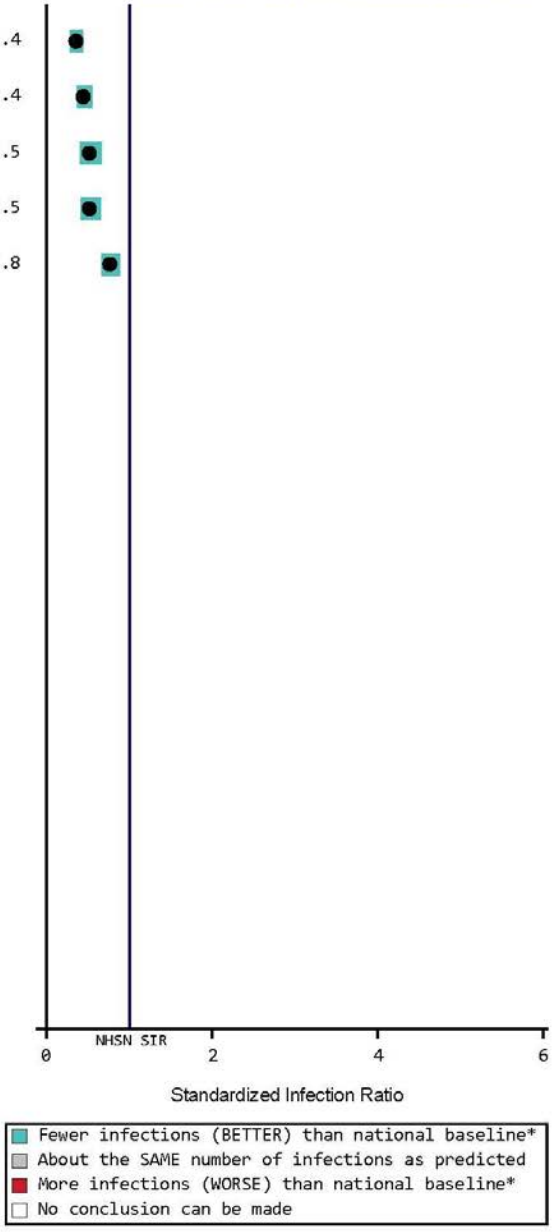
HOSPITAL	OBS	PRED	PD	SIR
Central Regional Hospital	0	19.7	113739	0.0
Moses Cone Hospital	10	111	166521	0.1
Gaston Memorial Hospital	17	97.7	120698	0.2
Novant Health Presbyterian Medical	24	106	144626	0.2
WakeMed	23	99.5	176460	0.2
Atrium Health Cabarrus	20	83.5	128095	0.2
Novant Health Forsyth Medical Center	59	195	214984	0.3
Mission Hospital	64	138	216105	0.5
Cape Fear Valley Health System	44	78.2	148021	0.6
Rex Healthcare	109	144	147703	0.8
New Hanover Regional Medical Center	156	154	189450	1.0



Data reported as of June 2, 2022.
OBS = # infections observed
PRED = # infections statistically predicted by national baseline
PD = # Patient Days
SIR = Standardized infection ratio (OBS/PRED # of infections)
NC = SIR not calculated for hospitals with <1 predicted infection
*Significantly different than 2015 national baseline

Clostridioides difficile infection (CDI) LabID Events
Standardized Infection Ratios: January 1 – December 31, 2021
Hospital Group: Hospitals with Primary Medical School Affiliation

HOSPITAL	OBS	PRED	PD	SIR
Atrium Health Carolinas Medical Center	71	202	275379	0.4
Duke University Hospital	77	174	305118	0.4
Wake Forest University Baptist Medical	57	111	209275	0.5
Vidant Medical Center	67	129	228501	0.5
UNC Health	156	204	245487	0.8



Data reported as of June 2, 2022.
OBS = # infections observed
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*Significantly different than 2015 national baseline

FAST FACTS: What You Need to Know About Healthcare-Associated Infections

Device-Associated HAIs

Sometimes, patients have medical devices inserted into their bodies to provide necessary medical care. These devices are called "invasive devices" and patients with these devices have a higher chance of getting an infection. Here is what you need to know about invasive devices and what kinds of infections they can be associated with:

- A **central line** is a tube placed in a large vein to allow access to the bloodstream and provide the patient with important medicine. A **central line-associated bloodstream infection (CLABSI)** can occur when bacteria or other germs travel along a central line and enter the blood. When not put in correctly or kept clean, central lines can become a pathway for germs to enter the body and cause serious bloodstream infections.

- A **urinary catheter** is a tube placed in the bladder to drain urine. A **catheter-associated urinary tract infection (CAUTI)** can occur when bacteria or other germs travel along a urinary catheter, resulting in an infection in the bladder or kidneys.

Other HAIs

- A **surgical site infection (SSI)** occurs after surgery in the part of the body where the surgery took place. These infections may involve only the skin, or may be more serious and involve tissue under the skin or organs. SSIs sometimes take days or months after surgery to develop. Symptoms may include fever, redness or pain around the surgical site, and drainage of fluid from the wound.

- **Methicillin-resistant *Staphylococcus aureus* (MRSA)** infections are caused by bacteria that are resistant to certain types of drugs including the antibiotic methicillin. MRSA can cause skin or wound infections. Sometimes, MRSA can infect the blood and cause serious illness and even death. Only bloodstream infections are shown in this report.

- ***Clostridioides difficile* (*C. difficile*)** is a type of bacteria that causes severe diarrhea and can be deadly. *C. difficile* infections usually occur in people who have recently taken antibiotics and been under medical care.

READING GUIDE: Explanation of Each Variable in the Tables and Figures

Below is a list of all variables shown in the data tables and figures:

- **Title**: The title of the table gives you information about the infection type, time period, and facility unit(s)/group(s) included in the table.

- **Procedure Type:** This is the specific type of surgery for which the surgical site infection (SSI) data are presented (e.g., abdominal hysterectomy, colon surgery).

- **Unit/Unit Type:** This is the specific unit/type of unit in the hospital from which the data was collected. Hospitals have distinct locations, or units, within the facility that are designated for certain types of patients. For example: "Med/Surg ICU" represents the intensive care unit (ICU) for very sick patients needing medical or surgical care.

- **Observed Infections (or Observed Events):** This is the number of infections (or events, for LabID measures) reported in the state.

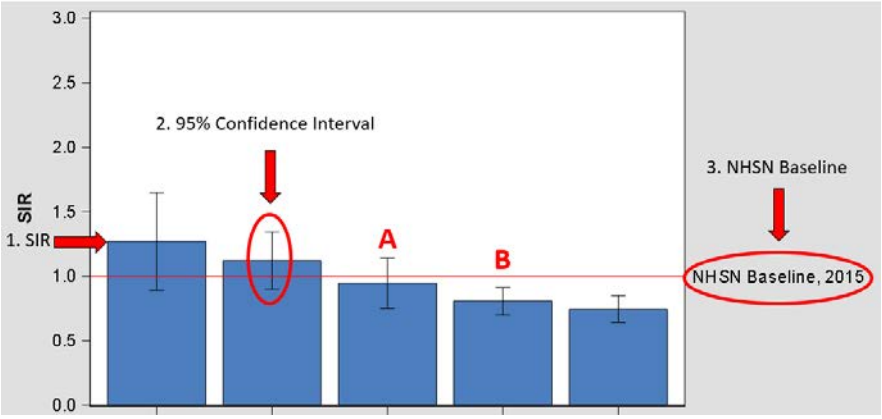
- **Predicted Infections (or Predicted Events):** This is a calculated value that reflects the number of infections (or events, for LabID measures) that we have "predicted" to occur in the state, based on the national experience.

- **"How Does North Carolina Compare to the National Experience?"** Colors and symbols are used to help you quickly understand and interpret the data. This is the "take-home message" about healthcare-associated infections in North Carolina.

  ★ Indicates that North Carolina had fewer infections than were predicted (better than the national experience)
  = Indicates that North Carolina had about the same number of infections as were predicted (same as the national experience)
  ✖ Indicates that North Carolina had more infections than were predicted (worse than the national experience)

NUMBERS GUIDE: Explanation of Numbers and Data Calculations

Below is an explanation of numbers and data calculations used in the figures:



1. SIR - Represented by the colored bars in each figure.

- SIR = number of *observed* infections / number of *predicted* infections based on the national baseline experience.
- An SIR of 1 means that the same number of infections was observed as were predicted. A SIR greater than 1 means that more infections were observed than predicted (worse), while an SIR less than 1 means fewer infections were observed that predicted (better).
- SIR is calculated for each HAI.
- The SIR is considered a "best guess" or estimate of observed infections compared to those predicted during the time period presented.

2. 95% confidence intervals for the SIR – Represented by the skinny gray lines in each figure.

These gray lines represent a lower and a higher limit around the SIR; together these limits create an interval. It means there is 95% confidence the SIR estimate falls within this interval. Wider bars indicate less confidence in the SIR estimate.

Interpreting the 95% confidence intervals:

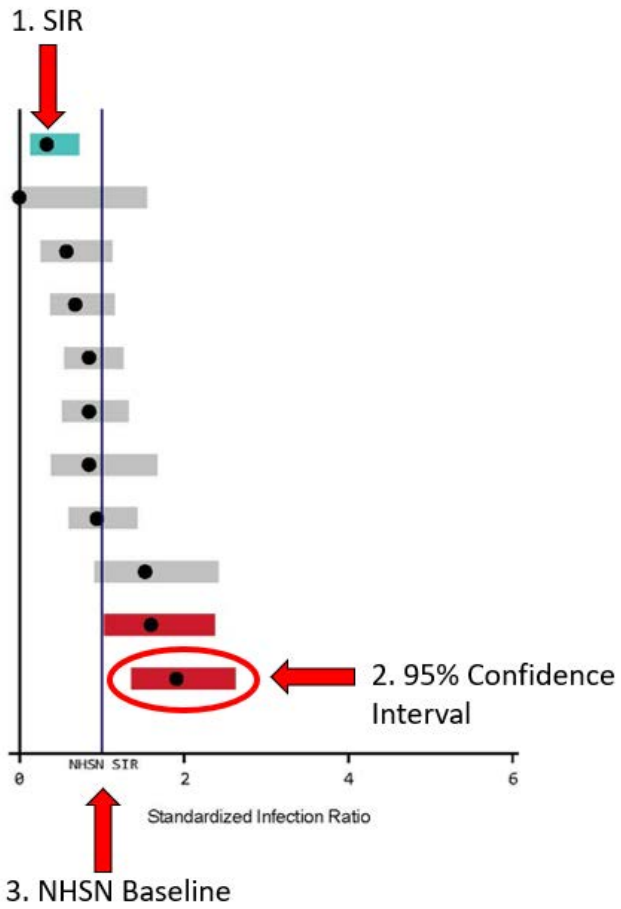
- If the value of 1.0 is included between the lower and upper limit, there is NO significant difference between the number of observed and predicted infections. For example, the bar marked A above is not significantly better than the national experience because the 95% confidence interval crosses the red line at 1.0 (the NHSN baseline).
- If the value of 1.0 is NOT included between the lower and upper limit, there IS a significant difference between the number of observed and predicted infections. For example, the bar marked B above is significantly better than the national experience because the 95% confidence interval does not cross the red line at 1.0.

3. NHSN Baseline (i.e., national experience) – Represented by the solid red line in each figure.

- The NHSN baseline is the number of predicted infections based on the national experience.
- The NHSN baseline year for all HAIs use data from 2015.

4. How can I use the SIR, 95% Confidence Interval, and the NHSN Baseline to know how North Carolina did compared to the national experience? To understand each figure, you will need to look at all three of these numbers. You'll specifically need to know whether the SIR falls around 1.0 (the NHSN baseline), less than 1.0 or greater than 1.0 and whether the 95% Confidence Interval contains the value of 1.0.

Below is an explanation of numbers and data calculations used in the SIR plots:



SIR plots are used to compare HAI infection data in North Carolina by hospital size groups. Each plot displays the facilities in a particular hospital size group on the left-hand side. To the right of each facility's information is the plot. The elements of this plot are described as follows:

1. SIR - Represented by a black circle on the plots

- SIR = number of *observed* infections / number of *predicted* infections based on the national baseline experience.
- SIR is calculated for each facility.
- The SIR is considered a "best guess" or estimate of observed infections compared to those predicted during time period displayed.

2. 95% confidence intervals for the SIR – Represented by the red, grey, and green bands surrounding the SIR dot. These bands represent a lower and a higher limit around the SIR. It means we are 95% confident the SIR estimate falls within this interval. Wider bands indicate less confidence in the SIR estimate.

Interpreting the 95% confidence intervals:

- If the value of 1.0 is included between the lower and upper limit, there is NO significant difference between the number of observed and predicted infections. Facilities with about the same number observed infections as predicted will have a grey confidence interval.

- If the upper confidence limit is less than 1.0, there were FEWER observed infections than predicted by the national experience. Facilities with fewer observed infections than predicted will have a green confidence interval.
- If the lower confidence limit is greater than 1.0, there were MORE observed infections than predicted by the national experience. Facilities with MORE observed infections than predicted will have a red confidence interval.

3. NHSN Baseline (i.e. national experience) – Represented by the solid line in each plot.

- The NHSN baseline is the number of predicted infections based on the national experience.
- The NHSN baseline year is 2015.

APPENDICES

APPENDIX A. Definitions

Term	Definition
Aggregate data	Sum or total data. For example, aggregate NC HAI data refers to the sum, or total, of all hospital HAI data in NC
Beds	The number of staffed beds in a facility or patient care location. This may be different from the number of licensed beds.
Catheter-associated urinary tract infection	Urinary tract infection (UTI) that occurs in a patient who had an indwelling urinary catheter in place within the 48-hour period before the onset of the UTI.
Central line	A catheter (tube) that doctors place in a large vein in the neck, chest, or groin ending in a large vein near the heart. It is used to give medication or fluids or to collect blood for medical tests. Also known as a central venous catheter.
Central line-associated bloodstream infection	A bloodstream infection (BSI) that occurs in a patient who had a central line within the 48-hour period before the onset of the BSI and is not related to an infection at another site.
Healthcare-associated infections	Healthcare-associated infections (HAI) are infections caused by a wide variety of common and unusual bacteria, fungi, and viruses during the course of receiving medical care.
Intensive care unit	A nursing care area that provides intensive observation, diagnosis, and therapeutic procedures for adults and children who are critically ill. Also referred to as critical care unit.
Medical affiliation	Affiliation with a medical school. There are four categories*:* *Major teaching* – Hospital is an important part of the teaching program of a medical school and the majority of medical students rotate through multiple clinical services. *Graduat*e – Hospital used by the medical school for graduate training programs only (i.e., residency and/or fellowships). *Limited* – Hospital used in the medical school's teaching program to a limited extent. *No* – Hospital not affiliated with a medical school.
Standardized infection ratio	A ratio of observed to expected (or predicted) numbers of infection events that is adjusted for selected risk factors.
Surgical site infection	Infection that occurs after surgery, in the part of the body where the surgery took place.
Urinary catheter	A drainage tube that is inserted into the urinary bladder through the urethra, is left in place, and is connected to a closed collection system.
Validity (data)	The extent to which reported cases of a disease or event correspond accurately to cases of a disease event that actually occurred.

APPENDIX B. Acronyms

APIC-NC	Association for Professionals in Infection Control and Epidemiology, NC Chapter
BSI	Bloodstream infection
CAUTI	Catheter-associated urinary tract infection
CDC	Centers for Disease Control and Prevention
C. diff	*Clostridioides difficile*
CDI	*Clostridioides difficile* infection
CI	Confidence interval
CMS	Centers for Medicare & Medicaid Services
CLABSI	Central line-associated bloodstream infections
CRE	Carbapenem-resistant Enterobacterales
DHHS	Department of Health and Human Services
DHSR	Division of Health Service Regulation
DPH	Division of Public Health
HAI	Healthcare-associated Infections
ICU	Intensive care unit
IP	Infection preventionist
MRSA	Methicillin-resistant *Staphylococcus aureus*
NCHA	North Carolina Healthcare Association
NC SPICE	North Carolina Statewide Program for Infection Control and Epidemiology
NHSN	National Healthcare Safety Network
NICU	Neonatal intensive (critical) care unit
SIR	Standardized infection ratio
SSI	Surgical site infection

Appendix C. Surveillance for Healthcare-Associated and Resistant Pathogens Patient Safety (SHARPPS) Program Advisory Group

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Appendix D. Healthcare Facility Groupings, 2021 National Healthcare Safety Network Annual Hospital Survey

Hospital Group	Hospital Name	Number of Beds
1-99 Beds	Vidant Bertie Hospital	6
	Firsthealth Moore Regional Hospital Hoke Campus	8
	Duke Lifepoint Swain Community Hospital	15
	Atrium Health Anson	15
	Cherokee Indian Hospital	18
	Martin General Hospital	18
	Person Memorial Hospital	18
	The Outer Banks Hospital	21
	Dosher Memorial Hospital	23
	Highlands Cashiers Hospital	24
	St. Lukes Hospital	25
	Murphy Medical Center	25
	Vidant Chowan Hospital	25
	Pender Memorial Hospital	25
	McDowell Hospital	30
	Novant Health Medical Park Hospital	33
	Angel Medical Center	35
	Rex Holly Springs Hospital	35
	Novant Health Clemmons Medical Center	36
	Blue Ridge Regional Hospital	38
	Transylvania Regional Hospital	40
	Central Harnett Hospital	44
	Cape Fear Valley Hoke Hospital	49
	Wake Forest Baptist Health Davie Medical Center	50
	Johnston Health Clayton	50
	Novant Health Mint Hill Medical Center	50
	Annie Penn Hospital	53
	WakeMed North Family Health & Women's Hospital	61
	Granville Medical Center	62
	Wake Forest Baptist Health-Lexington Medical Center	65
	Kings Mountain Hospital	67
	Novant Health Kernersville Medical Center	67
	Columbus Regional Healthcare System	70
	Randolph Hospital Dba Randolph Health	74
	Carteret General Hospital	76
	Vidant Beaufort Hospital	77
	Duke Lifepoint Harris Regional Hospital	78
	Firsthealth Moore Regional Hospital Richmond Campus	79
	Hugh Chatham Memorial Hospital	81
	Betsy Johnson Hospital	87

	Vidant Duplin Hospital	**89**
	Central Carolina Hospital	**89**
	Davis Regional Medical Center	**93**
	Halifax Regional Medical Center	**96**
	Maria Parham Medical Center	**99**
100-199 Beds	**Atrium Health University City**	**100**
	Haywood Regional Medical Center	**100**
	Northern Regional Hospital	**100**
	Atrium Health Lincoln	**101**
	Advent Health Hendersonville	**103**
	Scotland Memorial Hospital	**104**
	Novant Health Brunswick Medical Center	**108**
	UNC Rockingham Health	**108**
	Atrium Health Stanly	**109**
	Vidant Edgecombe Hospital	**111**
	Vidant Roanoke Chowan Hospital	**114**
	Sentara Albemarle Medical Center	**115**
	Sampson Regional Medical Center	**116**
	ARHS Watauga Medical Center	**117**
	Lake Norman Regional Medical Center	**123**
	Rutherford Regional Medical Center	**125**
	Wake Forest Baptist Health Wilkes Medical Center	**130**
	Novant Health Thomasville Medical Center	**134**
	Caldwell Memorial Hospital	**136**
	Wilson Medical Center	**137**
	Pardee Hospital	**143**
	Johnston Health	**149**
	Nash Health Care Systems	**150**
	Wesley Long Hospital	**150**
	UNC Health Blue Ridge	**151**
	Onslow Memorial Hospital	**162**
	Lenoir Memorial Hospital, Inc	**167**
	Atrium Health Union	**182**
	Duke Raleigh Hospital	**186**
	Frye Regional Medical Center	**190**
	Novant Health Huntersville Medical Center	**197**
	Iredell Memorial Hospital	**199**
200-399 Beds	**Atrium Health Mercy**	**207**
	WakeMed Cary Hospital	**208**
	Novant Health Matthews Medical Center	**213**
	Southeastern Regional Medical Center	**218**
	Alamance Regional Medical Center	**238**
	Atrium Health Cleveland	**241**
	Novant Health Rowan Medical Center	**247**

	Wayne Memorial Hospital	**249**
	Atrium Health Pineville	**252**
	Duke Regional Hospital	**252**
	Catawba Valley Medical Center	**253**
	Cherry Hospital	**259**
	Broughton Hospital	**265**
	High Point Regional Health System	**300**
	CarolinaEast Medical Center	**350**
	FirstHealth Moore Regional Hospital	**362**
400+ Beds	**Central Regional Hospital**	**405**
	Gaston Memorial Hospital	**435**
	Atrium Health Cabarrus	**457**
	Moses Cone Hospital	**517**
	WakeMed	**537**
	Rex Healthcare	**538**
	Novant Health Presbyterian Medical Center	**669**
	New Hanover Regional Medical Center	**740**
	Cape Fear Valley Health System	**775**
	Novant Health Forsyth Medical Center	**812**
	Mission Hospital	**815**
Primary Medical School Affiliation	**Atrium Health Carolinas Medical Center**	**872**
	Wake Forest University Baptist Medical Center	**881**
	UNC Health	**951**
	Vidant Medical Center	**1,039**
	Duke University Hospital	**1,048**