2019

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Healthcare-Associated Infections in North Carolina

Reporting Period:

January 1, 2019—December 31, 2019

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. • 10/2020**

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 2019, 3,574 HAIs were reported by NC acute care hospitals, resulting in at least $19,204,407* 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 2019.

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, 2019 through December 31, 2019. 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 among 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 NC DPH. Report definitions are provided (Appendix A). The report is meant to be a resource for healthcare providers and for the general public. This report is useful for anyone looking for 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 and to learn from best practices highlighted in our Stories of Success in Elimination.

The NC SHARPPS Program mission is to work in partnerships to prevent, detect, and respond to events and outbreaks of healthcare-associated and antimicrobial resistant infections in North Carolina.

The SHARPPS Program has five key program areas to achieve this mission: infrastructure; surveillance, investigation, and response; prevention, education, and training; monitoring and 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.

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[1] Centers for Disease Control and Prevention. Healthcare Associated Infections (HAI) HAI Data Data Portal. Last reviewed January 2020. 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 http://www.cdc.gov/HAI/surveillance/index.html.

[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 Cost of healthcare-associated Infections. May 2011 Available at https://apic.org/resources/cost-calculators. Accessed July 31, 2019.

*CLABSIs are not included in this cost estimate as APIC uses different criteria to measure these events. It is unclear how many CLABSIs meet that definition so they are left out of the cost calculation. This is true for the 2017 and 2018 reports as well and this will be true for future reports.

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

For more information:

- For more information on HAIs and the NC SHARPPS Program, please visit https://epi.dph.ncdhhs.gov/cd/diseases/hai.html
- To review background information on HAI surveillance in NC and details information on common statistics used: https://epi.dph.ncdhhs.gov/cd/hai/figures.html

Acknowledgements

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

The North Carolina SHARPPS Program would like to acknowledge and thank hospital infection preventionists across the state who work tirelessly to protect patients from infection. They 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 Adult Care Licensure and Nursing Home Licensure and Certification sections of the North Carolina Division of Health Service Regulation.

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I. Highlights of Healthcare-Associated Infections Activities in 2019

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 2019 include the following:

- ***MDRO Investigation and Response:*** In 2019, the SHARPPS Program led or participated in 75 acute responses statewide, including outbreaks and sentinel events (a single event initiating response) investigations. Of these responses, 35 were outbreaks in various types of healthcare settings both inpatient and outpatient. A total of 347 outbreaks were reported to the Communicable Disease Branch with 149 occuring in long-termlong-term care settings.

- ***GAS and Legionella Investigation and Response:*** In 2019, the SHARPPS program led or participated in 51 acute responses for invasive Group A Streptococcus (GAS) and eight sentinel investigations for Legionella in healthcare facilities. There were six invasive GAS outbreaks, all of which occurred in long-term care facilities.

- ***Program Infrastructure:*** The SHARPPS team consists of a program director, medical director, two epidemiologists, and a health educator. The SHARPPS team continued to work to increase communication and outreach to our stakeholders and customers, publishing newsletters and infographics. The SHARPPS team has provided 12 educational sessions focusing on infection prevention and the role of public health, outbreak investigation and response, antimicrobial resistant pathogens, including Carbapenem Resistant Enterobacteriaceae and *Candida auris*, and antimicrobial stewardship.

- ***One and Only Safe Injection Practices Campaign****:* A new One & Only Campaign webpage has been created. This CDC webpage centralizes the Campaign's suite of resources available to educate about the basics of injection safety. It features Campaign multi-media resources developed over the last year 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. We have provided nine presentations and trainings in 2019.

- ***Be Antibiotics Aware: Smart Use Best Care:*** The North Carolina Department of Health and Human Services celebrated Antibiotics Awareness Week by announcing the winners of the "Be Antibiotics Aware: Smart Use, Best Care Campaign" poster contest on Nov. 15. Students from grades K–12 statewide were invited to submit artwork regarding antibiotic awareness, and nine winners were selected and recognized. 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's) Antibiotic Resistance Laboratory Network (ARLN) and Local Health Departments (LHDs) on Carbapenem Resistant Enterobacteriaceae (CRE) and *Candida auris* containment efforts. NC SLPH provides support for the identification of CP-CRE to facilities statewide. NC SLPH also recruited 2 acute care hospitals to participate in sentinel surveillance for carbapenem resistant *Acinetobacter* species in partnership with ARLN. ARLN funding provides infrastructure and laboratory capacity to screen for CRE and *C. auris*, and LHD staff provide onsite support for investigations. SHARPPS team members

also updated the MDRO toolkit which can be found here: (https://epi.dph.ncdhhs.gov/cd/docs/MDROToolkit_080819.pdf).

- ***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, 19 acute care hospitals have enrolled; 4 Champion facilities and 15 Advanced facilities. We plan to expand this initiative to include all healthcare settings in a stepwise fashion, with the initial expansion planned for Long-term Care. STAR Partners provides recognition through certificates, listing participating facilities on the NC SHARPPS website, receipt of the NC SHARPPS newsletter, as well as access to a mentorship program and educational offerings. For more information visit: https://epi.publichealth.nc.gov/cd/antibiotics/star_partners.html.

  NC DPH has also made a commitment to the U.S. Government's Antimicrobial Resistance (AMR) Challenge, a year-long effort to accelerate the fight against antimicrobial resistance across the globe. The AMR Challenge is a way for governments, private industries, and non-governmental organizations worldwide to make formal commitments to further the progress against antimicrobial resistance. The AMR Challenge launched in September 2019 and organizations can continue to make commitments until September 2020. The CDC will feature commitments throughout the year, and all commitments are posted on the AMR Challenge web page: https://www.cdc.gov/drugresistance/intl-activities/amr-challenge.html. Participants can make commitments in one or more of five areas including tracking and data; infection prevention and control; antibiotic use; environment and sanitation; and vaccines, therapeutics, and diagnostics. Ask if your facility has made a commitment to the AMR Challenge!

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 2019 are summarized below.

Classroom Courses:

- In 2019, SPICE held four classroom courses targeting new infection preventionists (IPs) in acute and long-term care settings, training 446 healthcare professionals.

.0206 NC Curriculum for Infection Control:

- 336 outpatient, dental and home health hospice health care professionals completed the .0206 NC Infection Control Curriculum on line.
- 2111 outpatient, dental and home health hospice health care professionals completed the .0206 NC Infection Control Curriculum in a classroom setting.

Enhanced Education of Infection Prevention in Nursing Homes:

- Free modules (DVD and on-line) covering Antibiotic Resistant Bacteria, Isolation Precautions, Injection Safety, Environment, *Clostridium difficile*, and UTIs. 319 modules completed.
- Coursera also houses these modules as a course. 848 learners enrolled in 2019.

Phone and Email Consultations:

- SPICE provided 1282 infection control consultations by phone or email in 2019.

Special Projects:

- With NC DHHS funding, SPICE finalized an update of the .0206 NC Curriculum for Infection Control
  - https://spice.unc.edu/0206spice
- SPICE utilized NC DHHS funds to produce 4 educational videos:
  - Infection Control Assessment: Long-Term Care facilities https://vimeo.com/showcase/6118634
  - Infection Control Assessment: Local Health Departments https://vimeo.com/showcase/6118634
  - Basics of Infection Control https://vimeo.com/showcase/6118845
  - Injection Safety https://vimeo.com/showcase/6118845

In-Services/Presentations:

- March 13th: Presentation on infection prevention to the NCDPH staff
- 5/15 – E. Cook presentation at Annual Federal Tort Claims Act University Conference in Asheville: Infection Prevention and Control in Outpatient Healthcare Settings;
- 7/19 -Greenville: EC presentation for the NC Environmental Health regional meeting: "Safer Healthcare Environment"
- 8/28 Webinar on "Using Data to Drive and Sustain Improvement: Analyzing, displaying, and presenting data effectively" presented to Norton Health in Kentucky
- 8/6 - SHARPPS Advisory Group Call
- 8/9 and 9/13: Infection Control Training for Outpatient Settings (in Edenton and Kinston, respectively). Total of 105 attendees
- 9/5 - Zoom webinar: Understanding Enhanced Barrier Precautions in LTCFs; E Cook and S Carrico; N=155
- 9/23 - Presentation by E Cook: Management of Epidemiologically Important Pathogens: Survey of Acute Care Hospitals in North Carolina
- October 17th Webinar: Engaging Patients and Visitors in Compliance with TBPs
- October 24th APIC Zone Meeting Presentation given: TJC "Standard Approach to IC"

On Site Consultation:

- 5/29 – Conference Call/consultation with NCDPH/respiratory outbreak in LTCF;
- 5/30 – Site assessment LTCF related to outbreak, Albemarle;
- 6/11 - APIC Conference Philadelphia presentation: "Infection Prevention and Control Assessment Tools in Outpatient Facilities.
- 5/29 – Conference Call/consultation with NCDPH/respiratory outbreak in LTCF;
- 5/30 – Site assessment LTCF related to outbreak, Albemarle;

Meetings:

- Attendance at APIC National Conference June 11-14, 2019
- Attendance at APIC NC Fall Conference 9/23-9/26
- SPICE convenes a meeting of the Public Health Institutions Task Force (twice annually): May 10, 2019 and October 25, 2019.
- December 6th APIC-NC Transition Meeting Greensboro, NC
- October 8-11th Becker's Annual Health Care Conference Chicago

North Carolina Division of Health Service Regulation (DHSR)

In 2019, DHSR conducted or participated in the following:

1. Bi-annual training to approximately 200 nursing home and acute care surveyors in conjunction with NC SPICE and NC SHARPPS.
2. Dissemination of NC SPICE and NC SHARPPS newsletters and routine NC SHARPPS updates (including outbreaks reported in long-term care settings) to Long-Term Care (LTC) and Acute Home Care Surveyors and nursing home administrators.
3. Centers for Medicaid and Medicare Services (CMS) mandatory training (conducted at time of hire) for all Long-Term Care (LTC) surveyors and Acute Home Care Surveyors on Infection Prevention and Control.
4. A series of three CMS Infection Control webinars mandatory for all Nursing Home surveyors. These webinars addressed Contact Precautions, multi-drug resistant organisms (MDROs), environmental hazards, and other Infection Control issues.
5. Dissemination of CDC updates and other alerts from the Nursing Home Licensure and Certification Section (NHLCS) Regional Office to surveyors and nursing home administrators.
6. Continued collaboration with NC SHARPPS on healthcare associated infections and other emerging issues, collaborating across NC on infection control issues in long-term care settings.

Alliant Quality, The Quality Innovation Network – Quality Improvement Organization for Georgia and North Carolina

Alliant Quality developed resources regarding COVID 19 and infection prevention strategies and disseminates this information via the website (www.alliantquality.org) and QIN-QIO Newsletter. The QIN-QIO continues to provide Technical Assistance for North Carolina nursing homes reporting LTC COVID-19 and Clostridiodes difficile cases into CDC's National Healthcare Safety Network (NHSN). Monthly Shop Talk STAR (Surveillance, Tracking, And Reporting) Webinars focus on education and resources related to NHSN. Additionally, monthly Learning and Action Network events focus on nursing home related quality improvement topics with Subject Matter Experts. At the direction of CMS, Alliant Quality will continue to provide Technical Assistance to facilities identified with Infection Prevention deficiencies through Quality Improvement Methodologies.

II. Healthcare-Associated Infections Data

The SHARPPS HAI Annual Report for 2019 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 Quarterly Reports, available here: http://epi.publichealth.nc.gov/cd/hai/figures.html.

A. WHAT IS THE PURPOSE OF THIS REPORT?

This report is meant 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 these five HAIs to the North Carolina Division of Public Health. More information about North Carolina's mandatory reporting can be found here: http://epi.publichealth.nc.gov/cd/hai/prevention/laws.html.

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.

More information about NHSN can be found here: http://www.cdc.gov/nhsn/.

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, 2019 through December 31, 2019. 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 under 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: https://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/nhsn-sir-guide.pdf.

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 v. 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 E.

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. You can read more about the change in baseline here.

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 (2019) 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 one of 10 groups, *Candida* & other yeasts/fungi, *Enterobacter*, *Enterococcus*, *Escherichia coli* (*E. coli*), *Klebsiella*, *Pseudomonas*, *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 organism exclusions specific to a HAI can be found in the patient safety manual (https://www.cdc.gov/nhsn/pdfs/validation/2019/pcsmanual_2019-508.pdf).

c. THINGS TO CONSIDER WHEN LOOKING AT THE REPORT

A total of 105 North Carolina hospitals reported HAIs in 2019, including 96 short-term acute-care hospitals, seven long-term acute-care hospitals, seven inpatient rehabilitation facilities, and nine specialty hospitals. This report includes data from the 96 short-term acute-care hospitals. Facility-specific data for all of these hospital types can be found here: http://epi.publichealth.nc.gov/cd/hai/figures.html.

These reports cover data from January 1, 2019 through Decemnber 31, 2019. Data were downloaded from the National Healthcare Safety Network (NHSN) on May 7, 2020; 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., CMS - 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.

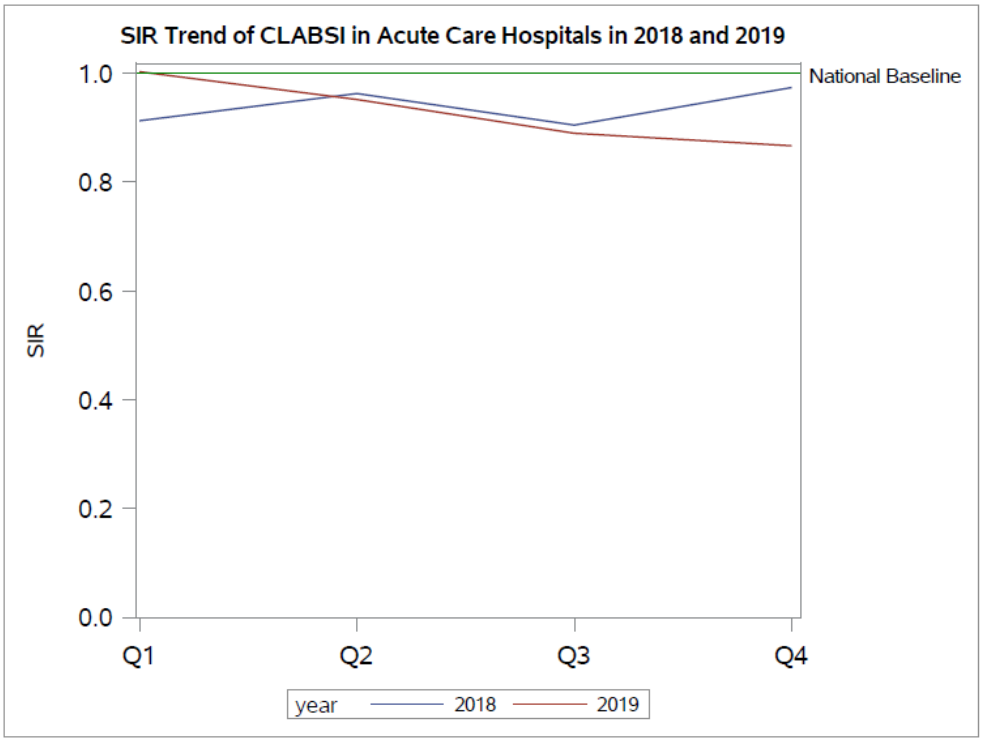
6. **Laboratory-Identified Events (LabID Events):** *Clostridioides difficile* infections (CDI) and methicillin-resistant *Staphylococcus aureus* (MRSA) bacteremia (blood infection) LabID events rely on laboratory data. Patients did not have to be ill to have a positive result, and a positive result 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, particularly for CDI may vary. 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 Guide to the SIR (https://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/nhsn-sir-guide.pdf).

D. HEALTHCARE-ASSOCIATED INFECTIONS TRENDS FOR 2018 AND 2019

The SIR for both MRSA LabID events and CDI LabID events was below the national baseline for both 2018 and 2019. For all types of HAIs, there were some months/quarters that performed BETTER than the national experience. 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 2018 and 2019.

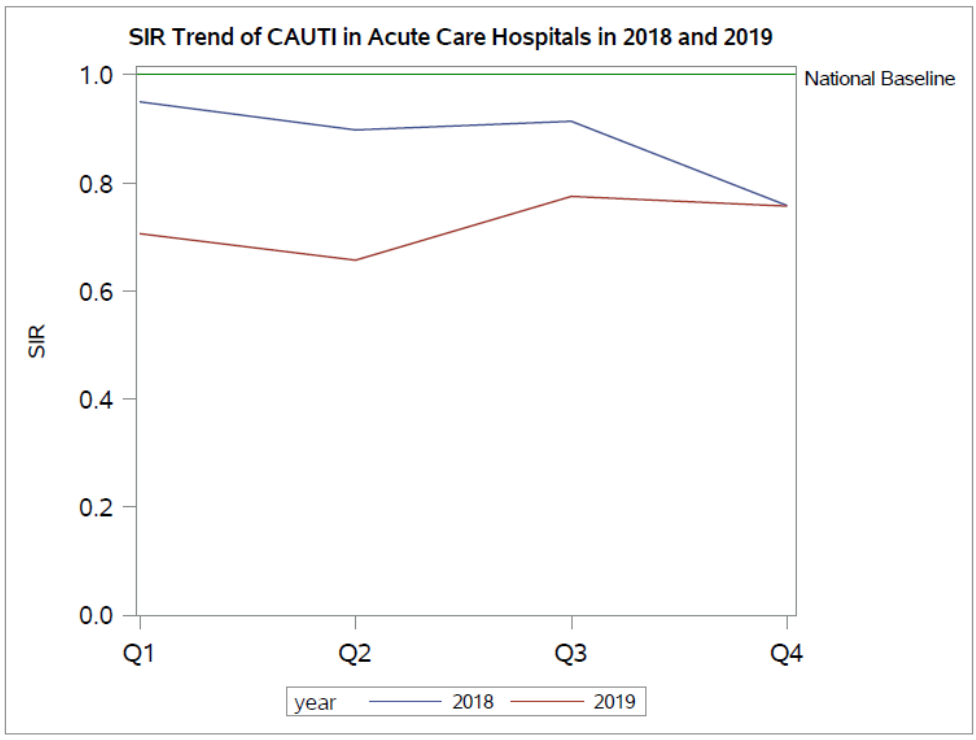
Figure 1:



Interpreting Figure 1:

- All Quarters in 2018 and 2019 reported about the same number of CLABSIs as predicted, performing the SAME as the national experience

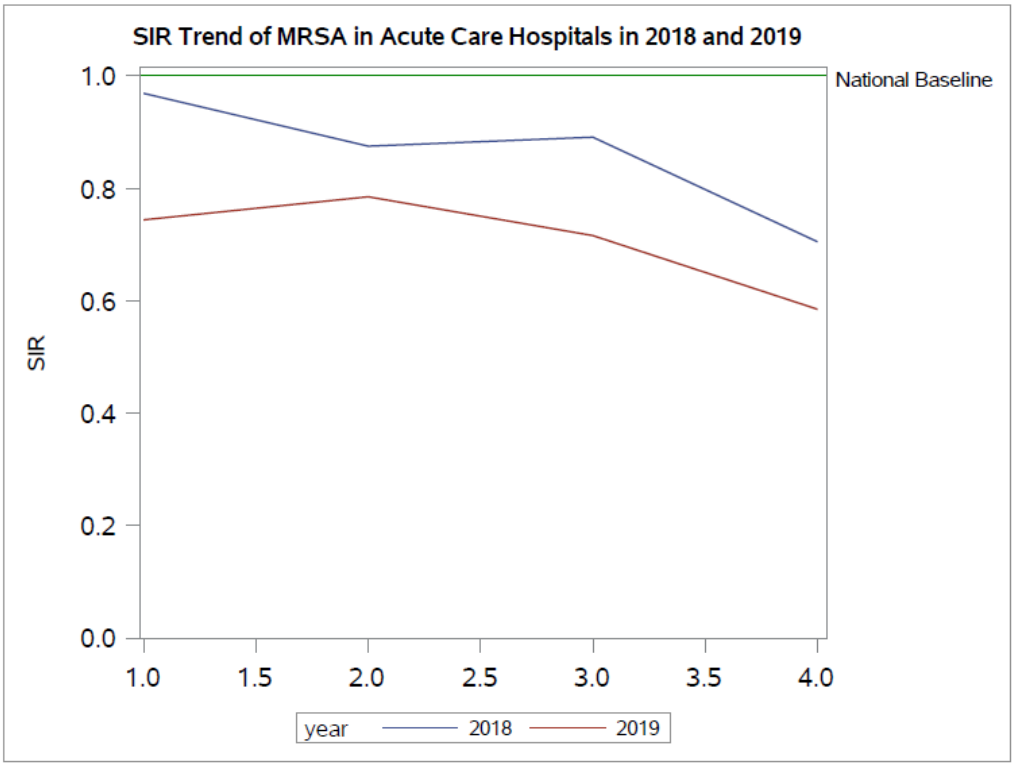
Figure 2:



Interpreting Figure 2:

- Quarter 4 of 2018 and all Quarters of 2019 experienced fewer CAUTIs than predicted, performing BETTER than the national experience

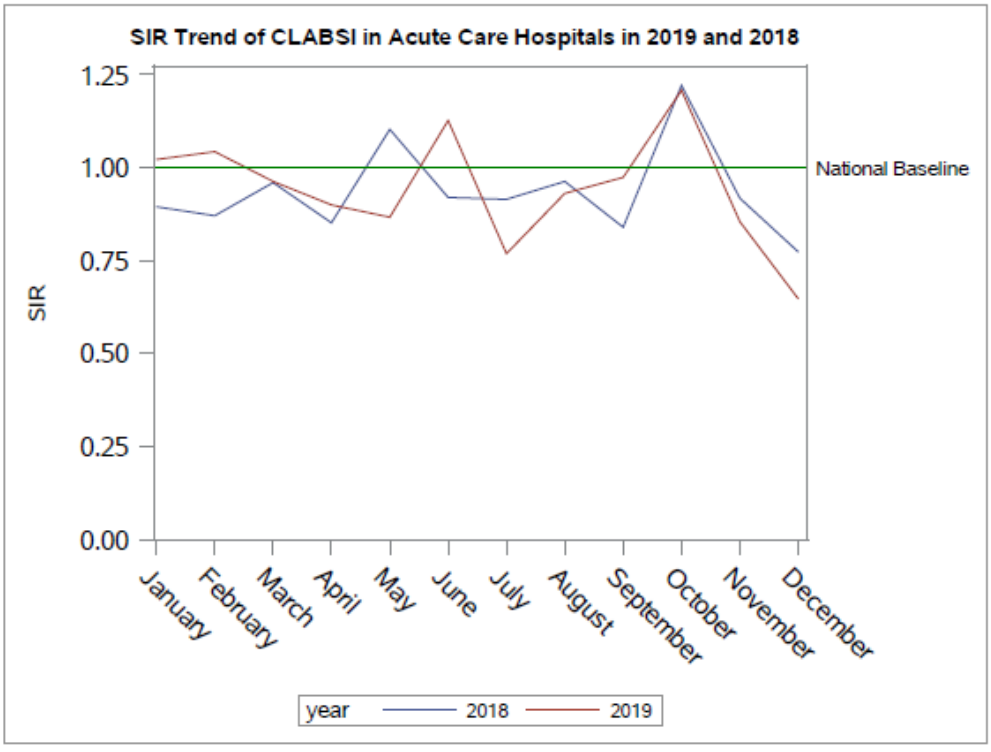
Figure 3:



Interpreting Figure 3:

- All Quarters in 2018 and 2019 reported about the same number of MRSA LabID events as predicted, performing the SAME as the national experience

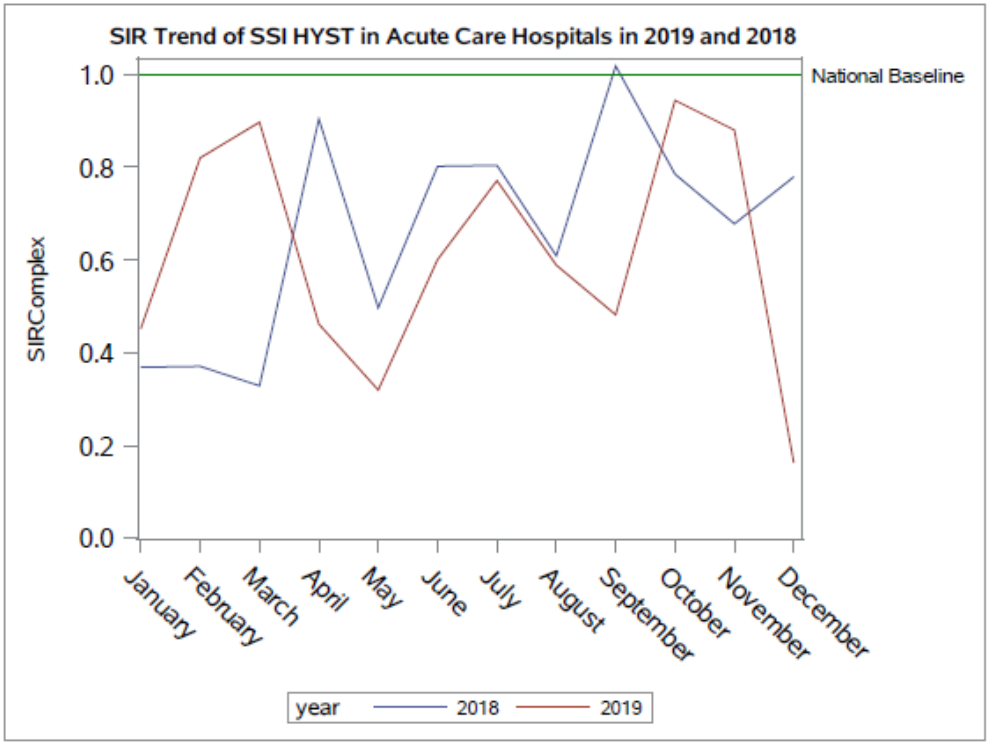
Figure 4:



Interpreting Figure 4:

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

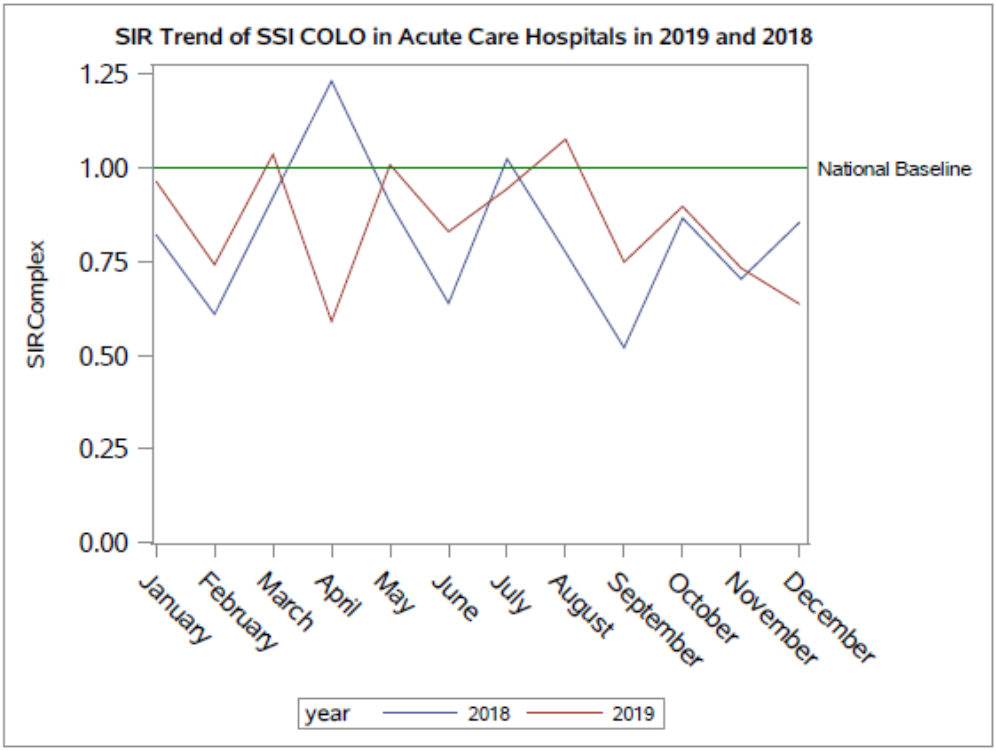
Figure 5:



Interpreting Figure 5:

- Quarter 1 of 2018 and Quarter 3 of 2019 experienced fewer HYST SSIs than predicted, performing BETTER than the national experience
- All other Quarters experienced the same number of HYST SSIs as predicted, performing the SAME as the national experience

Figure 6:



Interpreting Figure 6:

- Quarter 1 in 2018 experienced fewer COLO SSIs than predicted, performing BETTER than the national experience
- All other Quarters experienced the same number of COLO SSIs as predicted, performing the SAME as the national experience

III. Statewide Healthcare-Associated Infections

A. Central Line-Associated Bloodstream Infections (CLABSI)

1. CLABSI in Adult/Pediatric ICUs

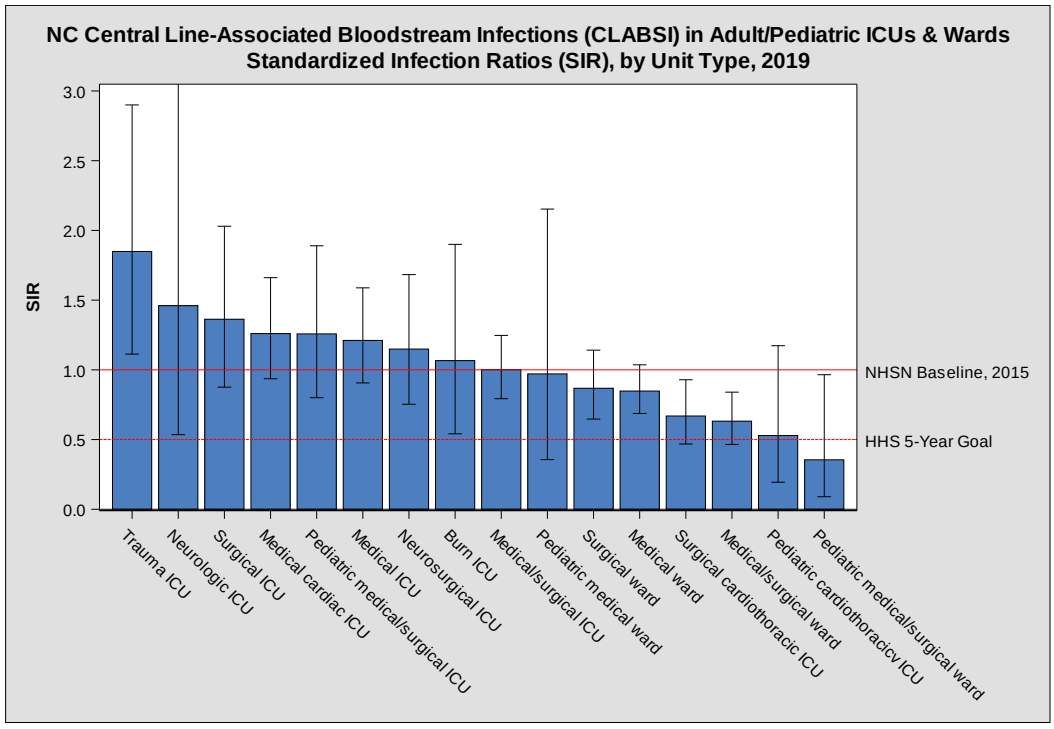
North Carolina 2019 CLABSI Highlights in Adult/Pediatric Medical, Surgical, and Medical/Surgical Wards & ICUs

- North Carolina hospitals reported 499 infections, compared to the 533 infections predicted by the national experience; this was about the same as the 2015 national experience.
- In 2019, North Carolina did not meet the U.S. Department of Health and Human Services 2020 goal to reduce CLABSIs by 50% from the 2015 national baseline experience.
- The most commonly identified organisms from adult and pediatric CLABSI patients were *Candida* and other yeasts/fungi followed by *Enterococcus* .

Table 1. NC Central Line Associated Bloodstream Infections (CLABSI) in Adult/Pediatric Medical, Surgical and Medical/Surgical Wards & ICUs, 2019

Year	# Observed Infections	# Predicted Infections	How Does North Carolina Compare to the National Experience?
2019	499	533.062	**= SAME: about the same number of infections as were predicted (same as the national experience)**

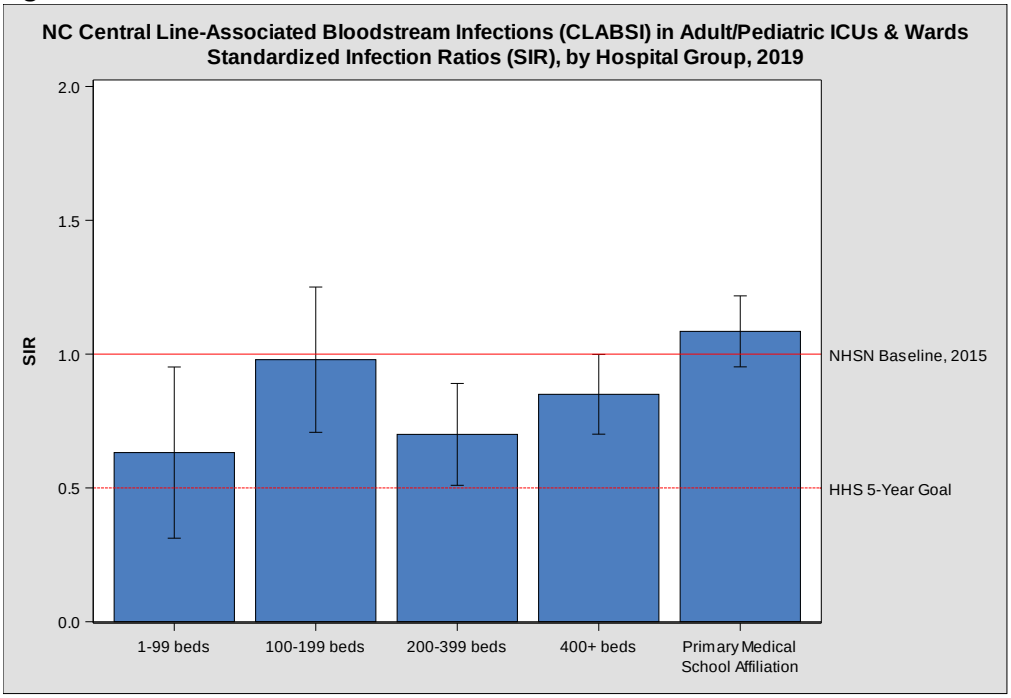
Figure 7.



Interpreting Figure 7:

- In 2019, medical surgical wards, pediatric medical/surgical wards, and surgical cardiothoracic ICUs reported fewer infections than predicted, performing BETTER than the national experience
- In 2019, trauma ICUs reported more infections than predicted, performing WORSE than the national experience

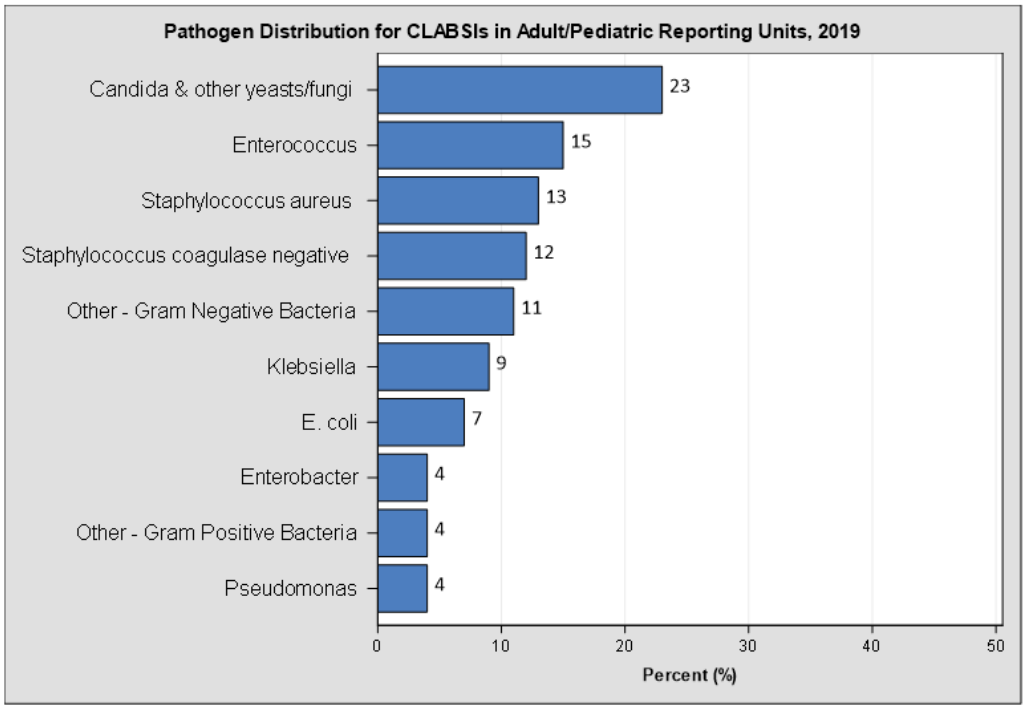
Figure 8.



Interpreting Figure 8:

- In 2019, hospitals with 1-99 beds, 200-399 and 400+ beds observed fewer CLABSIs than predicted, performing BETTER than the national experience
- All other hospitals observed about the same number of CLABSIs as predicted, performing the SAME as the national experience

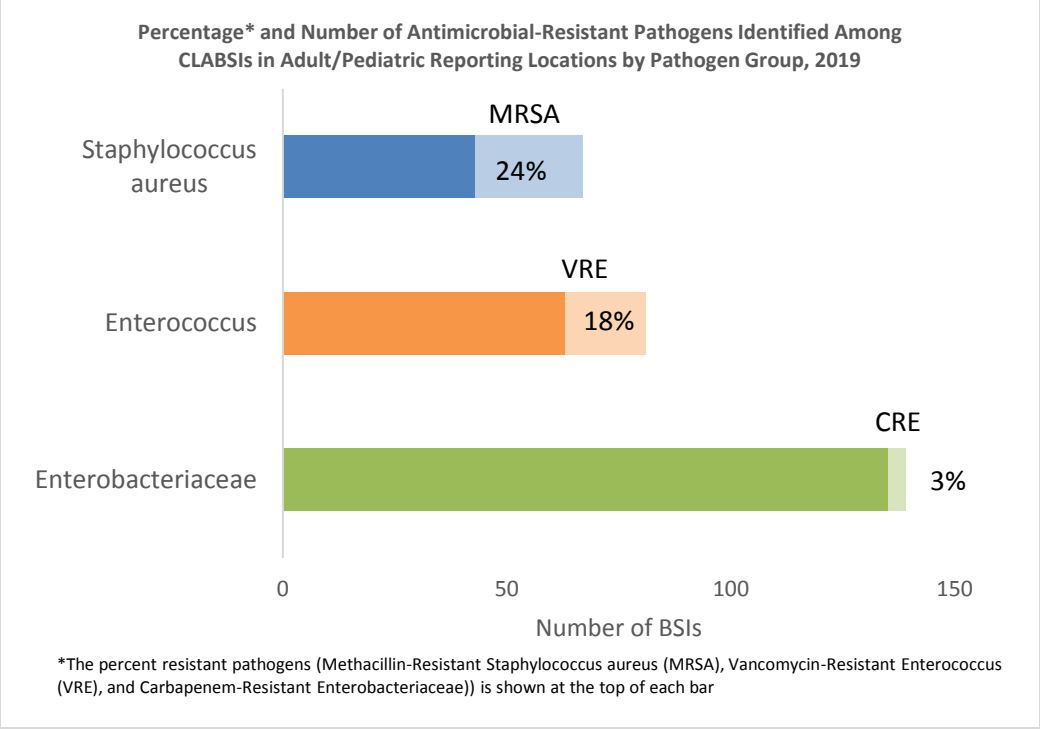
Figure 9.



Interpreting Figure 9:

- In 2019, The most commonly identified organisms from adult and pediatric CLABSI patients were *Candida* & other yeasts/fungi (21%) followed by *Enterococcus* (14%)

Figure 10.



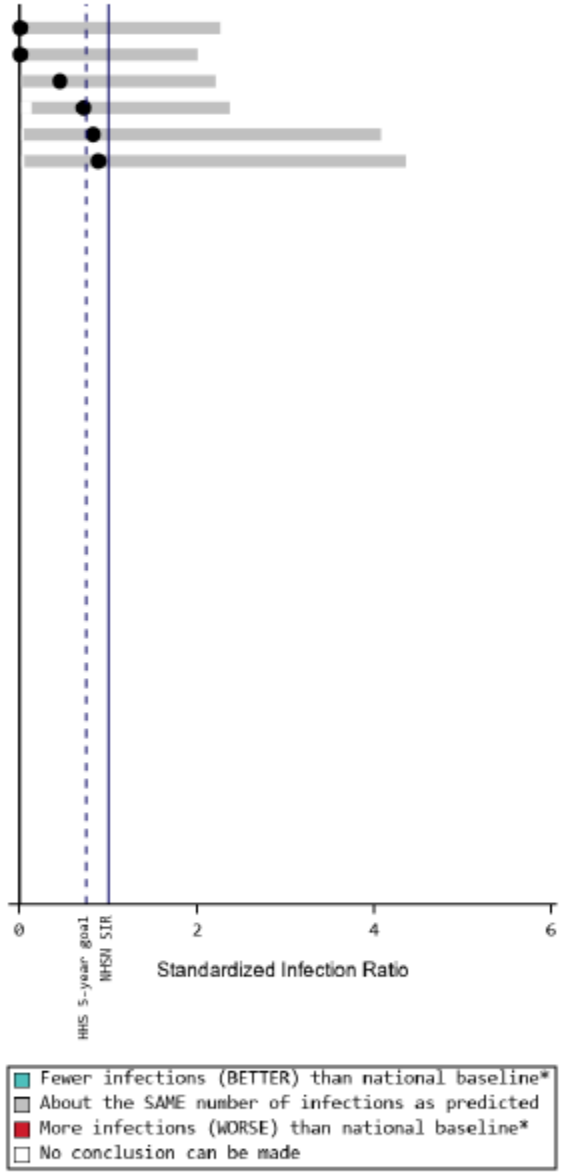
Interpreting Figure 10:

- In 2019, 24% of *Staphylococcus aureus* identified among adult/pediatric CLABSIs were resistant to methicillin.
- 18% of *Enterococcus* identified among adult/pediatric CLABSIs were resistant to vancomycin.
- The percentage of *Enterobacteriaceae* identified among adult/pediatric CLABSIs resistant to carbapenems is low (3%).

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

CLABSI in Adult/Pediatric Medical, Surgical, and Medical/Surgical Wards and ICUs
Standardized Infection Ratios: January 1 – December 31, 2019
Hospital Group: Hospitals with less than 100 Beds

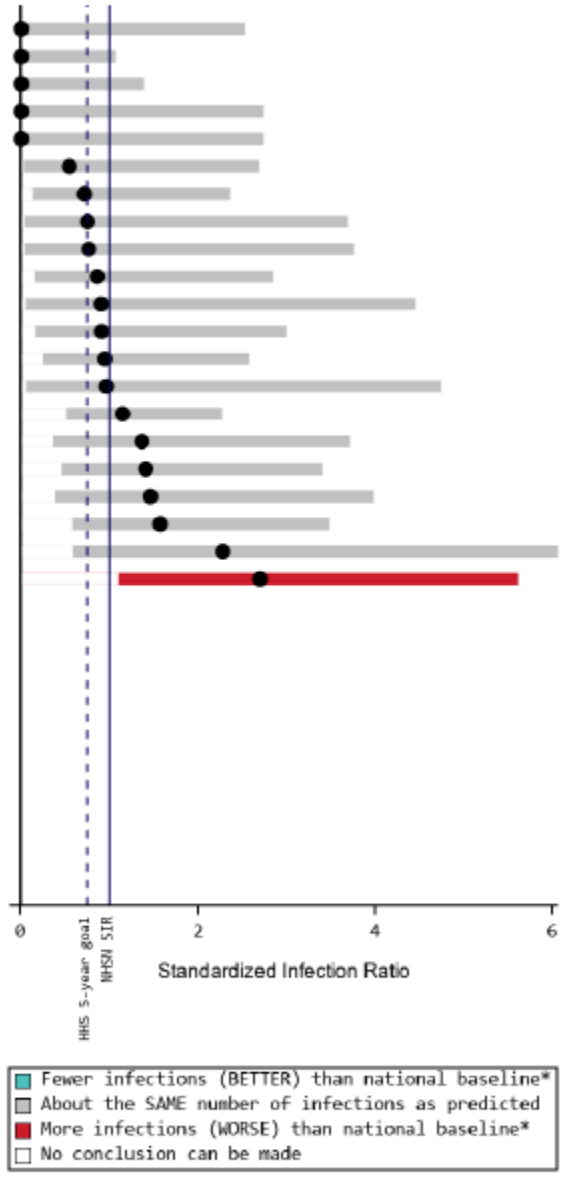
HOSPITAL INTERVAL	OBS	PRED	CLDays	SIR
Dlp - Harris Regional Hospital	0	1.3	2160	0.0
Maria Parham Medical Center	0	1.5	2103	0.0
Catawba Valley Medical Center	1	2.2	3610	0.4
Caldwell Memorial Hospital	2	2.8	4559	0.7
Columbus Regional Healthcare System	1	1.2	1972	0.8
Wake Forest Baptist Health-Lexington	1	1.1	1434	0.9
McDowell Hospital	0	0.4	635	NC
Cherokee Indian Hospital	0	0.3	603	NC
Sentara Albemarle Medical Center	0	0.9	1262	NC
Martin General Hospital	0	0.2	275	NC
Randolph Hospital Dba Randolph Health	2	0.6	939	NC
Vidant Beaufort Hospital	0	0.7	1119	NC
Granville Medical Center	0	0.5	768	NC
Carteret General Hospital	0	0.5	911	NC
Novant Health Brunswick Medical Center	1	0.6	970	NC
Vidant Duplin Hospital	1	0.6	855	NC
Central Carolina Hospital	1	0.9	1591	NC
Kings Mountain Hospital	0	0.0	62	NC
Person Memorial Hospital	1	0.2	329	NC
Novant Health Medical Park Hospital	0	0.3	332	NC
Betsy Johnson Hospital	0	0.9	1319	NC
Hugh Chatham Memorial Hospital	0	0.7	1237	NC
Carolinas Healthcare System Anson	NA	NA	N	NC
Annie Penn Hospital	0	0.8	1231	NC
North Carolina Specialty Hospital	0	0.1	109	NC
Wake Forest Baptist Health-Davie Medical	0	0.4	631	NC
Johnston Health Clayton	0	0.3	492	NC
Cape Fear Valley Hoke Hospital	0	0.1	188	NC
Novant Health Kernersville Medical Cente	1	0.6	790	NC
Wakemed North Family Health & Women's Ho	NA	NA	N	NC
Central Harnett Hospital	1	0.3	413	NC
Novant Health Clemmons Medical Center	0	0.0	57	NC
Novant Health Mint Hill Medical Center	0	0.6	800	NC



Data reported as of May 1, 2020 .
OBS = # infections observed
PRED = # infections statistically 'predicted' by national baseline
CLDays = # of Central Line Days
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
N = < 50 Central Line Days reported
*Significantly different than 2015 national baseline

CLABSI in Adult/Pediatric Medical, Surgical, and Medical/Surgical Wards and ICUs
Standardized Infection Ratios: January 1 – December 31, 2019
Hospital Group: Hospitals with 100 to 199 Beds

HOSPITAL INTERVAL	OBS	PRED	CLDays	SIR
Haywood Regional Medical Center	0	1.2	1481	0.0
Vidant Edgecombe Hospital	0	2.8	3128	0.0
Novant Health Matthews Medical Center	0	2.2	2729	0.0
Atrium Health Lincoln	0	1.1	1614	0.0
Wake Forest Baptist Health Wilkes Medica	0	1.1	1613	0.0
Lenoir Memorial Hospital	1	1.8	2729	0.5
Iredell Memorial Hospital	2	2.8	4011	0.7
Atrium Health University City	1	1.3	1650	0.7
Lake Norman Regional Medical Center	1	1.3	1908	0.8
Novant Health Huntersville	2	2.3	3004	0.9
Wilson Medical Center	1	1.1	1700	0.9
Atrium-Union	2	2.2	3140	0.9
Frye Regional Medical Center	3	3.2	3421	0.9
Rutherford Regional Medical Center	1	1.0	1533	1.0
Duke Raleigh Hospital	7	6.1	6962	1.1
Wesley Long Hospital	3	2.2	3132	1.4
Johnston Health	4	2.8	3637	1.4
Pardee Hospital	3	2.1	2606	1.5
Nash Health Care Systems	5	3.2	4627	1.6
Halifax Regional Medical Center	3	1.3	1956	2.3
WakeMed Cary Hospital	6	2.2	2785	2.7
Advent Health Hendersonville	0	0.4	507	NC
ARHS-Watauga Medical Center	0	0.5	781	NC
Davis Regional Medical Center	1	0.2	341	NC
Vidant Roanoke Chowan Hospital	0	0.6	845	NC
Novant Health Thomasville Medical Center	0	0.6	767	NC
Sampson Regional Medical Center	0	0.4	520	NC
Northern Regional Hospital	0	0.5	708	NC
Scotland Memorial Hospital	1	0.2	329	NC
Onslow Memorial Hospital	1	0.9	1303	NC
Atrium Health Stanly	2	0.7	1052	NC
UNC Rockingham Health	0	0.5	770	NC



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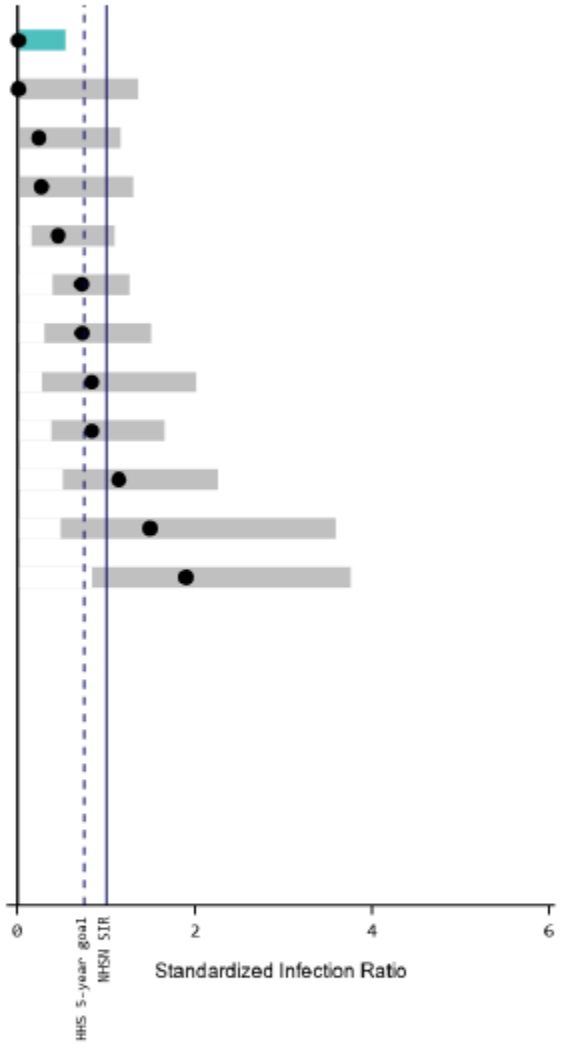
N = < 50 Central Line Days reported
*Significantly different than 2015 national baseline

CLABSI in Adult/Pediatric Medical, Surgical, and Medical/Surgical Wards and ICUs
Standardized Infection Ratios: January 1 – December 31, 2019
Hospital Group: Hospitals with 200 to 399 Beds

HOSPITAL INTERVAL	OBS	PRED	CLDays	SIR
CarolinaEast Medical Center	0	5.7	7143	0.0
Novant Health Rowan Medical Center	0	2.2	2804	0.0
Alamance Regional Medical Center	1	4.3	4080	0.2
Carolinas Healthcare System Cleveland	1	3.8	4737	0.3
Duke Regional Hospital	4	8.9	8677	0.4
Moses Cone Hospital	11	15.3	14232	0.7
FirstHealth Moore Regional Hospital	6	8.3	10425	0.7
Atrium-Pineville	4	4.8	5951	0.8
High Point Regional Health System	7	8.4	8172	0.8
Wayne Memorial Hospital	7	6.2	6566	1.1
Atrium-Mercy	4	2.7	3369	1.5
Southeastern Regional Medical Center	7	3.7	3999	1.9

SIR AND 95% CONFIDENCE

COMPARED TO 2015 NATIONAL BASELINE



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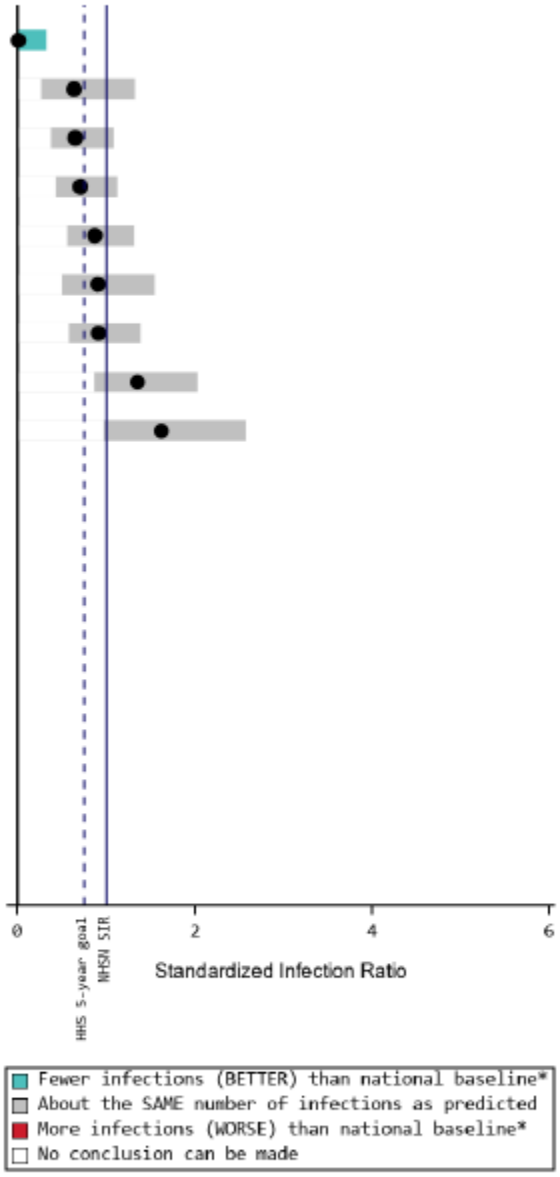
N = < 50 Central Line Days reported
*Significantly different than 2015 national baseline

CLABSI in Adult/Pediatric Medical, Surgical, and Medical/Surgical Wards and ICUs
Standardized Infection Ratios: January 1 – December 31, 2019
Hospital Group: Hospitals with 400 or More Beds

HOSPITAL INTERVAL	OBS	PRED	CLDays	SIR
Gaston Memorial Hospital	0	9.4	8870	0.0
Novant Health Presbyterian Medical	6	9.5	8700	0.6
Rex Healthcare	13	20.2	19453	0.6
Novant Health Forsyth Medical Center	16	22.8	21068	0.7
Mission Hospital	21	24.2	22942	0.9
Cape Fear Valley Health System	12	13.3	12412	0.9
New Hanover Regional Medical Center	20	22.1	21075	0.9
WakeMed	21	15.6	13879	1.3
Atrium Health Cabarrus	16	9.9	10713	1.6



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CLDays = # of Central Line Days
SIR = Standardized infection ratio (OBS/PRED # of infections)
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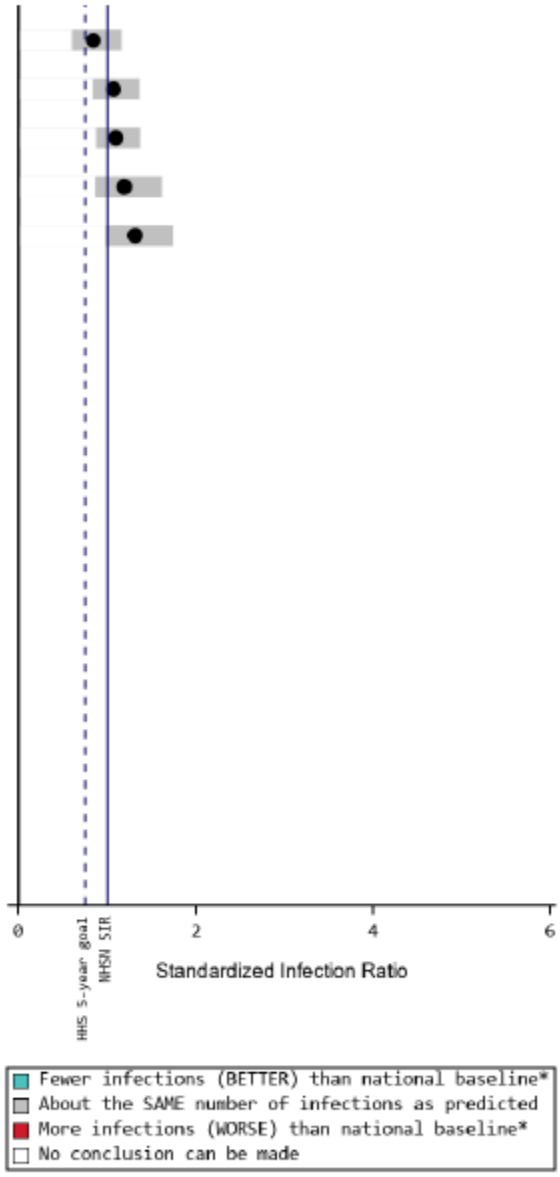
N = < 50 Central Line Days reported
*Significantly different than 2015 national baseline

CLABSI in Adult/Pediatric Medical, Surgical, and Medical/Surgical Wards and ICUs
Standardized Infection Ratios: January 1 – December 31, 2019
Hospital Group: Hospitals with Primary Medical School Affiliation

HOSPITAL INTERVAL	OBS	PRED	CLDays	SIR
Vidant Medical Center	35	41.7	38949	0.8
UNC Health Care	63	59.2	50167	1.1
Duke University Hospital	75	68.7	63352	1.1
Wake Forest University Baptist Medical	39	32.9	29549	1.2
Carolinas Medical Center	45	34.4	29884	1.3



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PRED = # infections statistically 'predicted' by national baseline
CLDays = # of Central Line Days
SIR = Standardized infection ratio (OBS/PRED # of infections)
NA = Data not shown for hospitals with <20 procedures
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N = < 50 Central Line Days reported
*Significantly different than 2015 national baseline

2. CLABSI in Neonatal Intensive Care Units

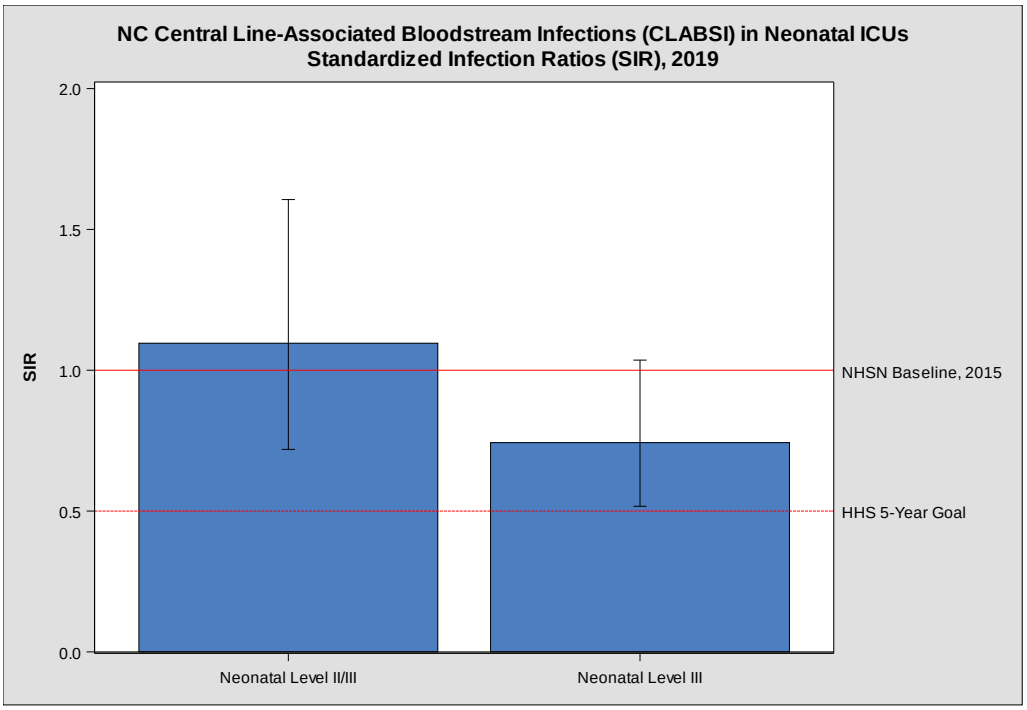
North Carolina 2019 CLABSI Highlights in NICUs

- In 2019, North Carolina hospitals reported 56 infections in neonatal ICUs, compared to the 65 infections that were predicted. This was about the same as the 2015 national experience.
- In 2019, North Carolina did not meet the U.S. Department of Health and Human Services 2020 goal to reduce CLABSIs by 50% from the 2015 national baseline experience.
- The most commonly identified organism from NICU CLABSI patients was *Staphylococcus aureus*.

Table 3. NC Central Line Associated Bloodstream Infections (CLABSI) in neonatal ICUs, 2019

Year	# Observed Infections	# Predicted Infections	How Does North Carolina Compare to the National Experience?
2019	**56**	**64.96**	**= SAME: about the same number of infections as were predicted (same as the national experience)**

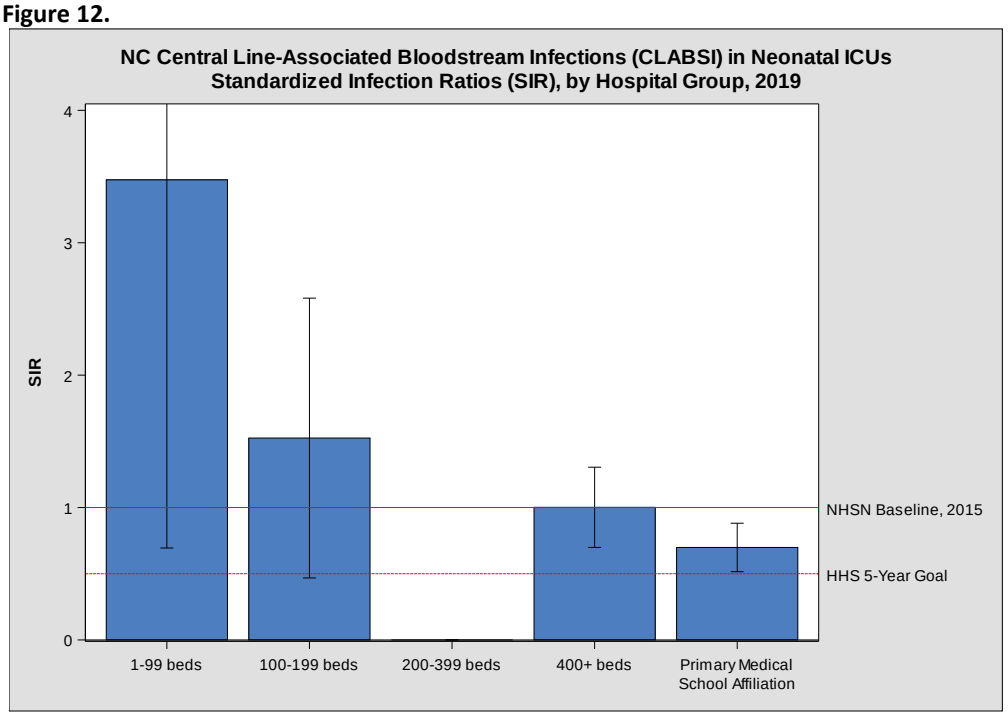
Figure 11.



Interpreting Figure 11:

- In 2019, level II/III and level III Neonatal ICUs observed the same number of CLABSIs as predicted, performing the SAME as the 2015 national experience
- Neither neonatal ICU II/III nor neonatal III locations met the HHS 5-year goal

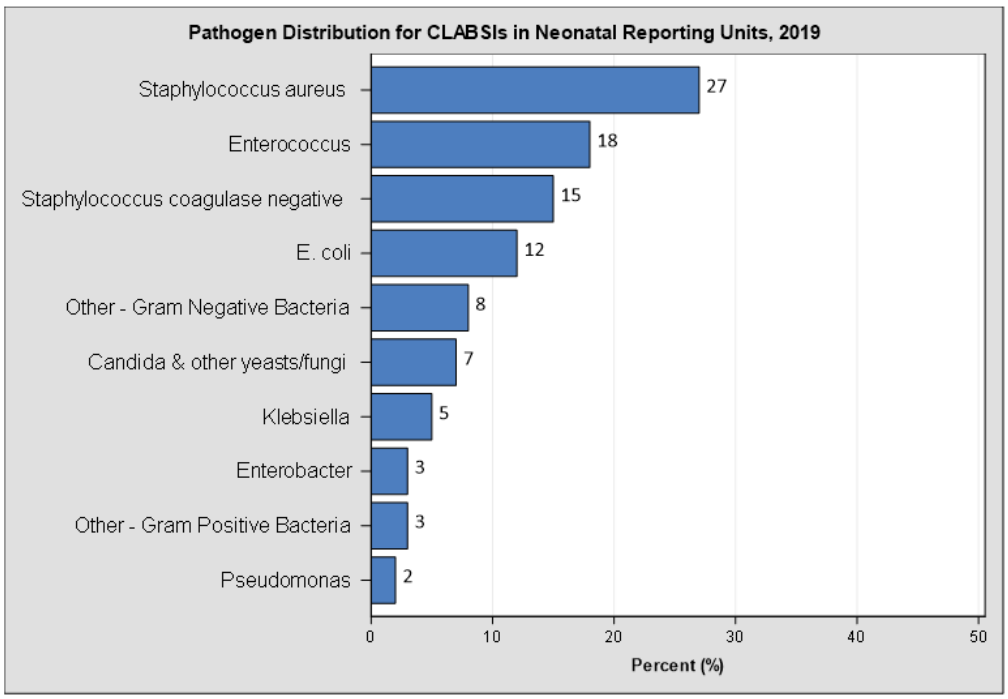
Figure 12.



Interpreting Figure 12:

- Not all hospital size groups have NICU locations
- Hospitals with 1-99 beds, 100-199 beds, and 400+ beds reported the same number of CLABSIs as predicted, performing the SAME as the 2015 national experience
- Hospitals with a primary medical school affiliation reported fewer CLABSIs in NICUs than predicted, performing BETTER than the 2015 national experience

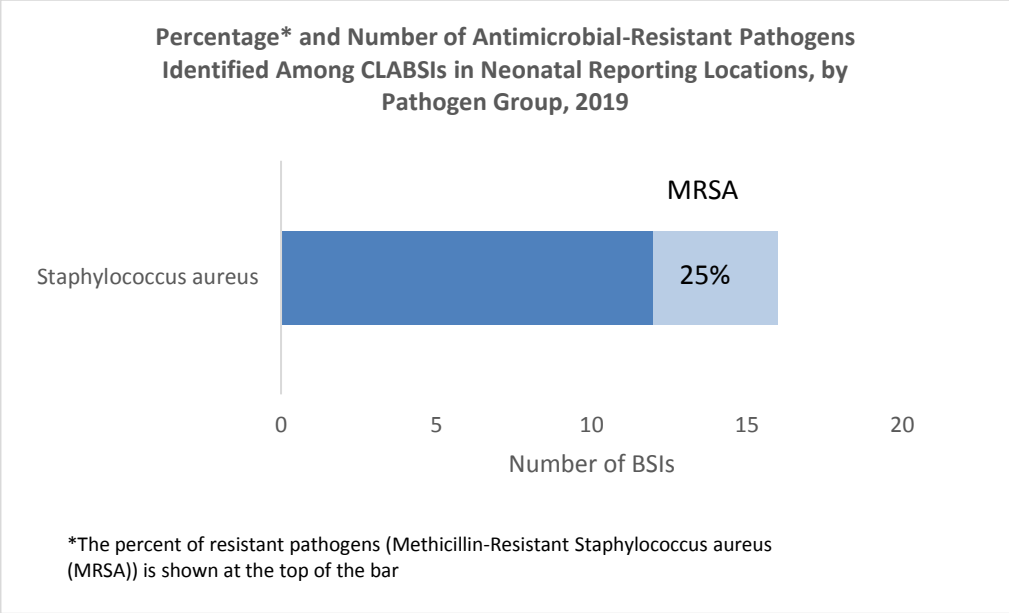
Figure 13.



Interpreting Figure 13:

- In 2019, *Staphylococcus aureus* (25%), was the most common pathogen identified from CLABSIs in NICU locations followed by *Enterococcus*
- The most common pathogen identified from CLABSIs in NICU locations is different than the most common pathogen from CLABSIs in adult/pediatric locations

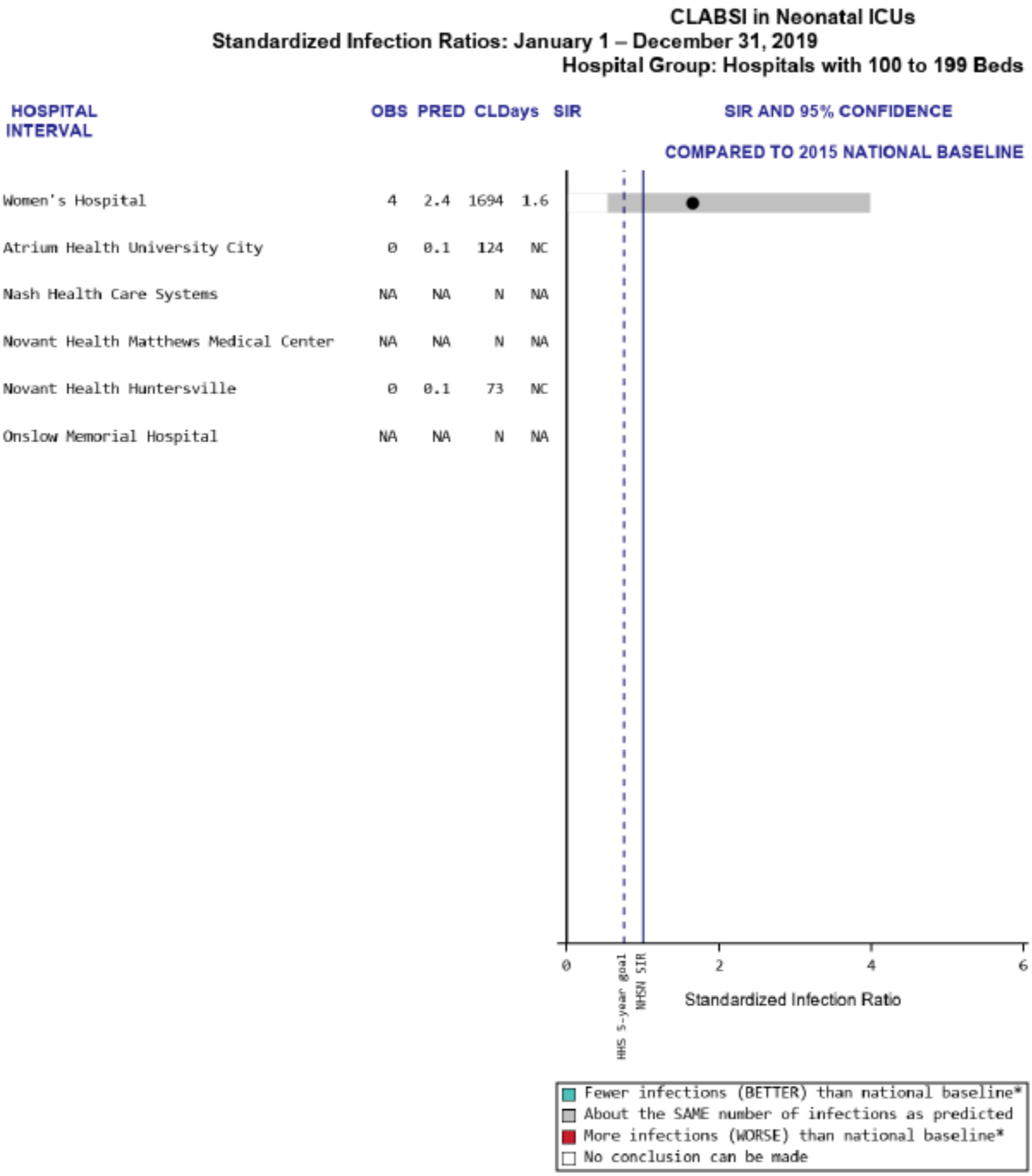
Figure 14.



Interpreting Figure 14:

- In 2019, 4 of 16 (25%) *Staphylococcus aureus* identified among observed CLABSI infections in NICUs were resistant to methicillin

The following SIR plots summarize CLABSI infection data among NICUs in North Carolina hospitals by hospital groups (Appendix E).



Data reported as of May 1, 2020 .
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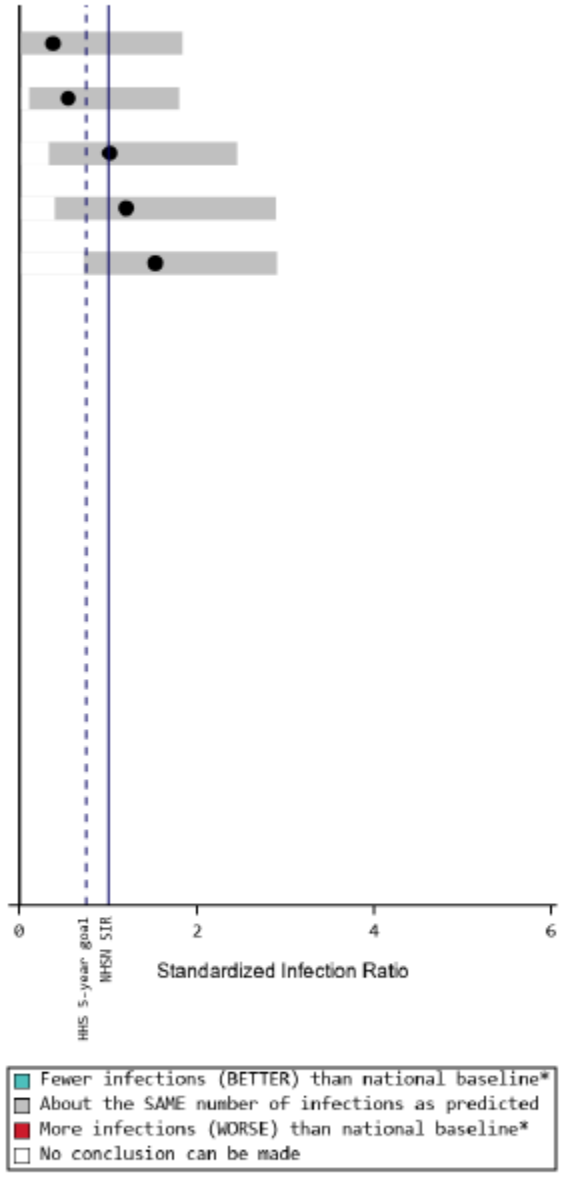
PRED = # infections statistically 'predicted' by national baseline
PROC = # procedures
SIR = Standardized infection ratio (OBS/PRED # of infections)
NA = Data not shown for hospitals with <20 procedures
NC = SIR not calculated for hospitals with <1 predicted infection
N = < 50 Central Line Days reported
*Significantly different than 2015 national baseline

CLABSI in Neonatal ICUs
Standardized Infection Ratios: January 1 – December 31, 2019
Hospital Group: Hospitals with 400 or More Beds

HOSPITAL INTERVAL	OBS	PRED	CLDays	SIR
Novant Health Forsyth Medical Center	1	2.7	1406	0.4
New Hanover Regional Medical Center	2	3.7	2560	0.5
WakeMed	4	4.0	2543	1.0
Mission Hospital	4	3.3	2353	1.2
Novant Health Presbyterian Medical	8	5.2	3351	1.5
Rex Healthcare	1	0.4	472	NC
Atrium Health Cabarrus	0	0.8	520	NC
Gaston Memorial Hospital	0	0.2	214	NC
Cape Fear Valley Health System	1	0.6	307	NC

SIR AND 95% CONFIDENCE
COMPARED TO 2015 NATIONAL BASELINE



Data reported as of May 1, 2020 .
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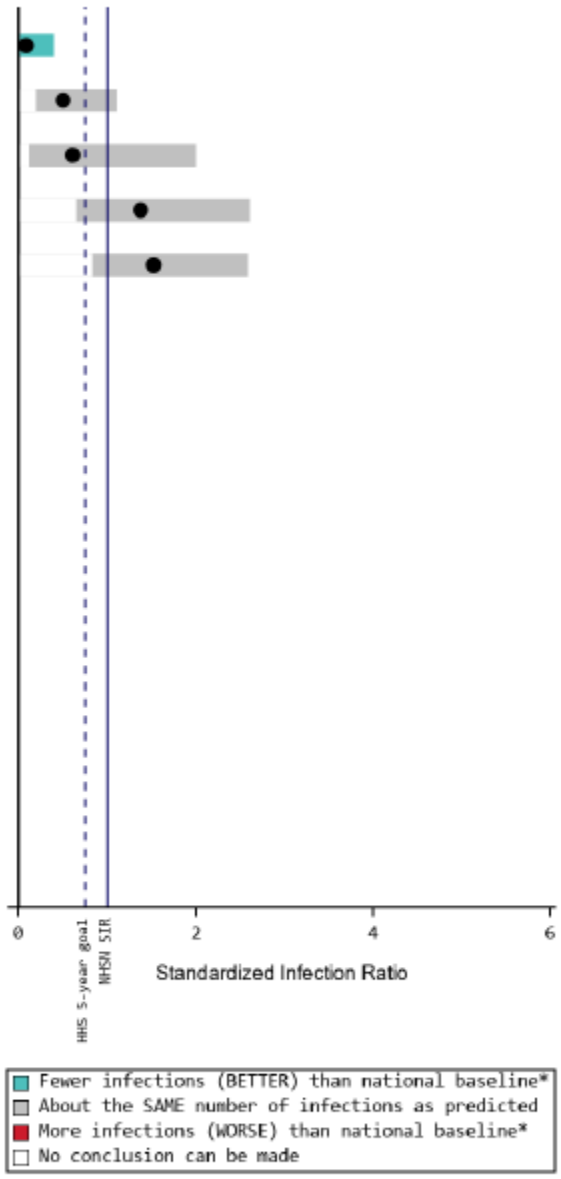
PRED = # infections statistically 'predicted' by national baseline
PROC = # procedures
SIR = Standardized infection ratio (OBS/PRED # of infections)
NA = Data not shown for hospitals with <20 procedures
NC = SIR not calculated for hospitals with <1 predicted infection
N = < 50 Central Line Days reported
*Significantly different than 2015 national baseline

CLABSI in Neonatal ICUs
Standardized Infection Ratios: January 1 – December 31, 2019
Hospital Group: Hospitals with Primary Medical School Affiliation

HOSPITAL INTERVAL	OBS	PRED	CLDays	SIR
Duke University Hospital	1	12.9	8045	0.1
Carolinas Medical Center	5	10.1	6859	0.5
Vidant Medical Center	2	3.3	2170	0.6
UNC Health Care	8	5.8	4046	1.4
Wake Forest University Baptist Medical	12	7.9	5314	1.5



Data reported as of May 1, 2020 .
OBS = # infections observed
PRED = # infections statistically 'predicted' by national baseline
PROC = # 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
N = < 50 Central Line Days reported
*Significantly different than 2015 national baseline

B. Catheter-Associated Urinary Tract Infections (CAUTI)

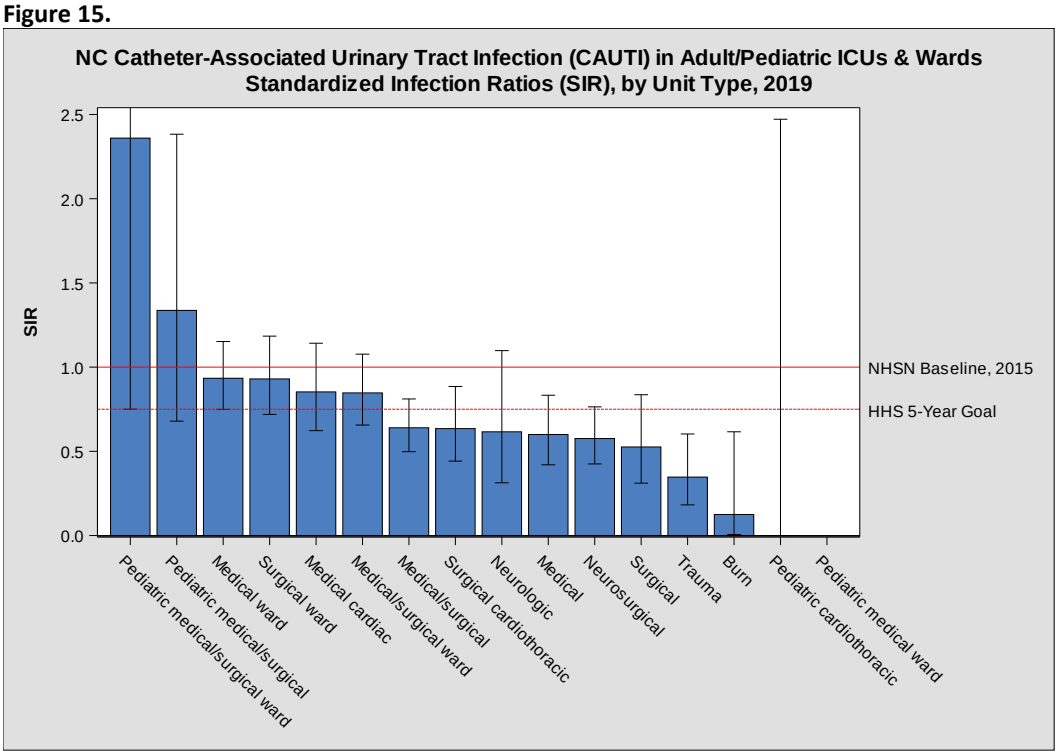
North Carolina 2019 CAUTI Highlights

- In 2019, North Carolina hospitals reported 478 CAUTI infections, compared to the 661 infections that were predicted. This was better than the 2015 national experience.
- In 2019, North Carolina met the U.S. Department of Health and Human Services 2020 goal to reduce CAUTIs by 25% from the 2015 national baseline experience.
- The most commonly identified organisms were *E. coli* and *Klebsiella*.

Table 5. NC Catheter-Associated Urinary Tract Infections (CAUTI) in ICUs and wards, 2019

Year	# Observed Infections	# Predicted Infections	How Does North Carolina Compare to the National Experience?
2019	478	661.4	★BETTER: Fewer infections than were predicted (better than the national experience)

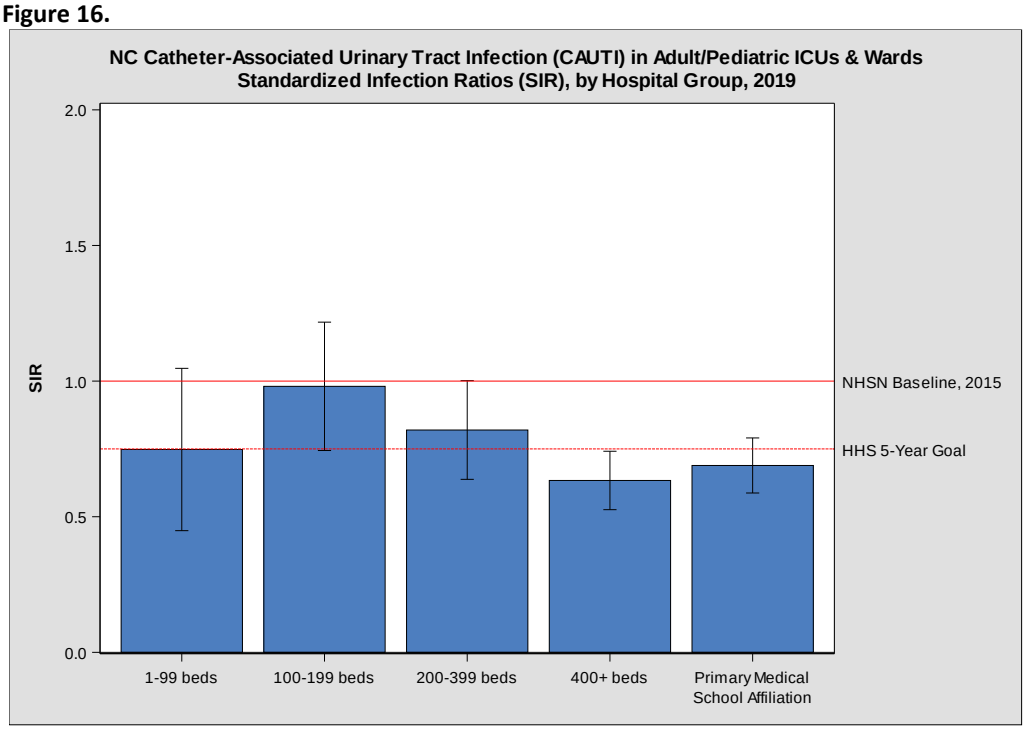
Figure 15.



Interpreting Figure 15:

- Burn, Medical, Medical/surgical, neurosurgical, surgical, surgical cardiothoracic, and Trauma wards/ICUs had fewer CAUTIs than predicted, performing BETTER than the national experience
- All other locations reported the same number of CAUTIs as predicted, performing the SAME as the 2015 national experience
- The pediatric cardiothoracic unit saw 0 CAUTI events therefore the 95% CI is large

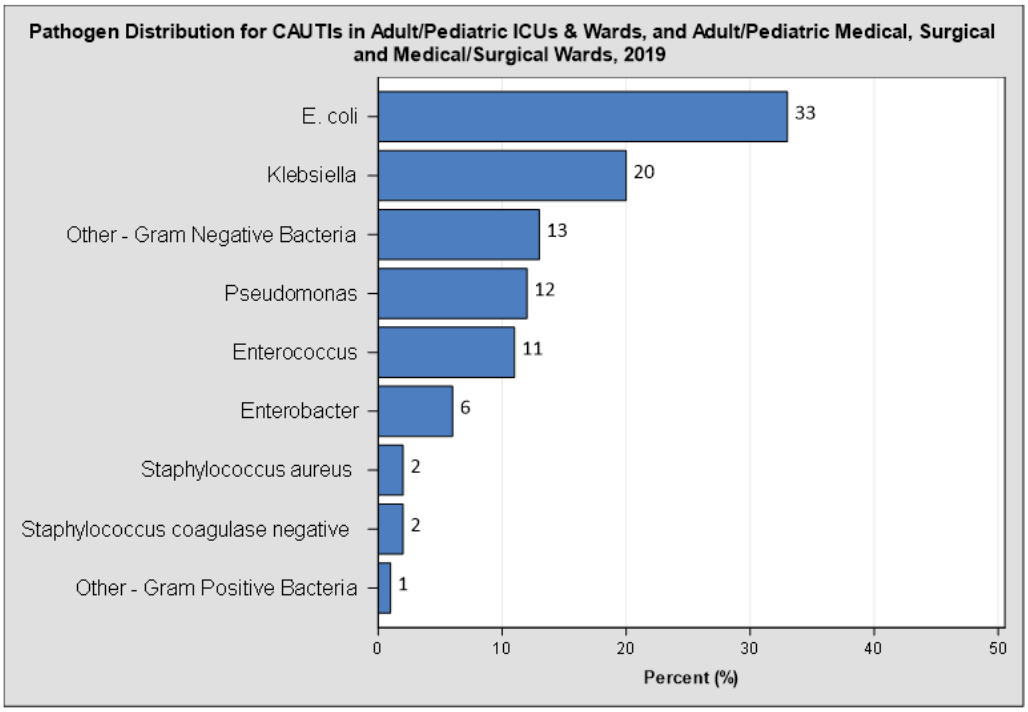
Figure 16.



Interpreting Figure 16:

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

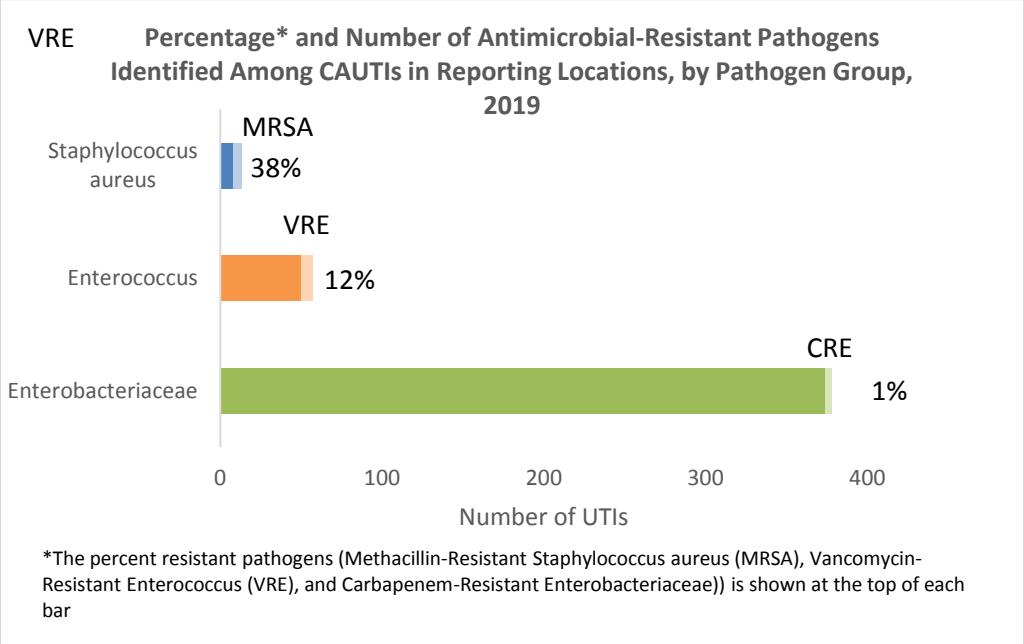
Figure 17.



Interpreting Figure 17:

- *E. coli* (32%) and *Klebsiella* (19%) were the most commonly identified pathogens among reported CAUTI infections in 2018
- *Candida* species and other yeasts are considered excluded organisms and cannot be used to meet the CAUTI definition

Figure 18.



*The percent resistant pathogens (Methacillin-Resistant Staphylococcus aureus (MRSA), Vancomycin-Resistant Enterococcus (VRE), and Carbapenem-Resistant Enterobacteriaceae)) is shown at the top of each bar

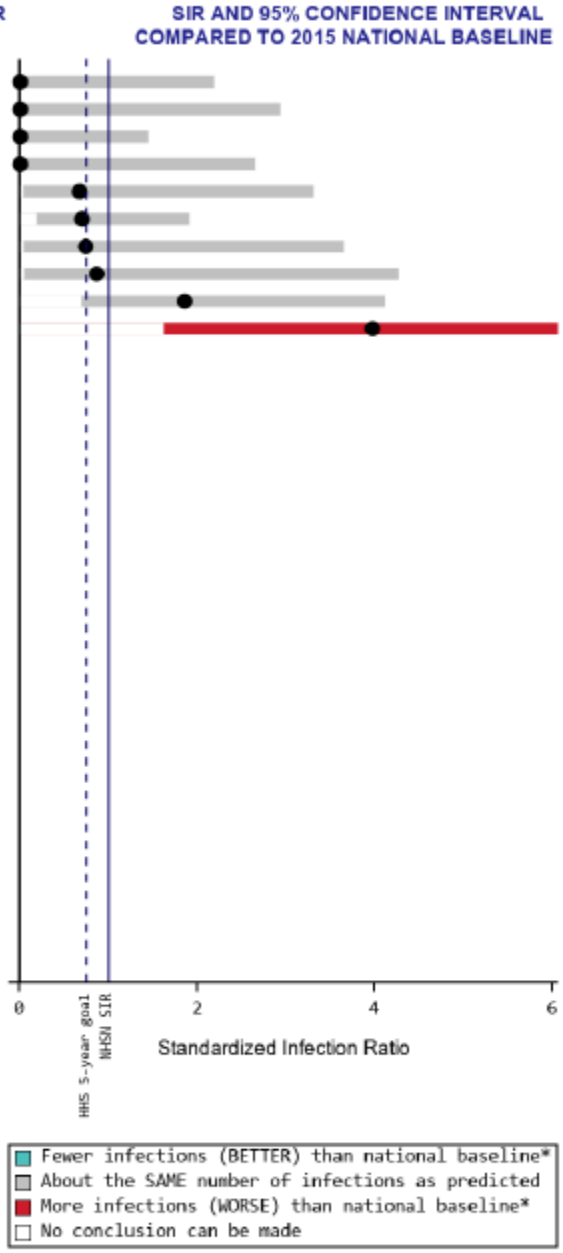
Interpreting Figure 18:

- Five of 13 (38%) *Staphylococcus aureus* identified among reported CAUTIs were resistant to methicillin
- 12% of *Enterococcus* identified among reported CAUTIs were resistant to Vancomycin
- 1% of *Enterobacteriaceae* identified among reported CAUTIs were resistant to carbapenems

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

CAUTI in Adult/Pediatric Medical, Surgical, and Medical/Surgical Wards and ICUs
Standardized Infection Ratios: January 1 – December 31, 2019
Hospital Group: Hospitals with less than 100 Beds

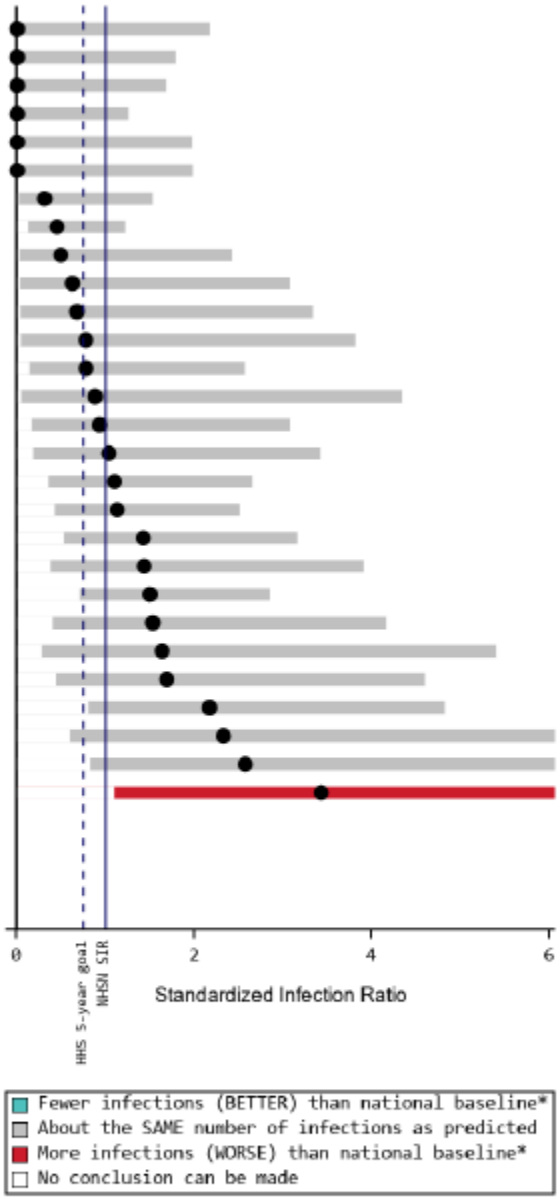
HOSPITAL	OBS	PRED	UCD	SIR
Dlp - Harris Regional Hospital	0	1.4	2536	0.0
Sentara Albemarle Medical Center	0	1.0	1450	0.0
Maria Parham Medical Center	0	2.1	2918	0.0
Hugh Chatham Memorial Hospital	0	1.1	2208	0.0
Central Carolina Hospital	1	1.5	2112	0.7
Catawba Valley Medical Center	3	4.3	6094	0.7
Wake Forest Baptist Health-Lexington	1	1.4	1786	0.7
Novant Health Medical Park Hospital	1	1.2	1624	0.9
Caldwell Memorial Hospital	5	2.7	5128	1.9
Betsy Johnson Hospital	6	1.5	2605	4.0
McDowell Hospital	1	0.6	1058	NC
Cherokee Indian Hospital	0	0.2	302	NC
Columbus Regional Healthcare System	0	0.9	1798	NC
Martin General Hospital	0	0.4	697	NC
Randolph Hospital Dba Randolph Health	1	0.8	1545	NC
Vidant Beaufort Hospital	0	0.8	1549	NC
Granville Medical Center	0	0.8	1531	NC
Carteret General Hospital	1	0.8	1656	NC
Novant Health Brunswick Medical Center	0	0.3	679	NC
Vidant Duplin Hospital	0	0.9	1181	NC
Kings Mountain Hospital	0	0.0	75	NC
Person Memorial Hospital	0	0.4	728	NC
Carolinas Healthcare System Anson	0	0.1	113	NC
Annie Penn Hospital	1	0.8	1631	NC
North Carolina Specialty Hospital	0	0.2	391	NC
Wake Forest Baptist Health-Davie Medical	0	0.2	306	NC
Johnston Health Clayton	1	0.3	523	NC
Cape Fear Valley Hoke Hospital	0	0.1	259	NC
Novant Health Kernersville Medical Cente	0	0.5	643	NC
Wakemed North Family Health & Women's Ho	0	0.2	382	NC
Central Harnett Hospital	0	0.6	1089	NC
Novant Health Clemmons Medical Center	0	0.1	149	NC
Novant Health Mint Hill Medical Center	0	0.3	480	NC



Data reported as of May 1, 2020 .
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 <20 procedures
NC = SIR not calculated for hospitals with <1 predicted infection
N = < 50 Urinary Catheter Days reported
*Significantly different than 2015 national baseline

CAUTI in Adult/Pediatric Medical, Surgical, and Medical/Surgical Wards and ICUs
Standardized Infection Ratios: January 1 – December 31, 2019
Hospital Group: Hospitals with 100 to 199 Beds

HOSPITAL	OBS	PRED	UCD	SIR
Atrium Health University City	0	1.4	1752	0.0
Novant Health Huntersville	0	1.7	2191	0.0
Atrium Health Lincoln	0	1.8	2511	0.0
Atrium-Union	0	2.4	3440	0.0
Atrium Health Stanly	0	1.5	2183	0.0
Unc Rockingham Health	0	1.5	2093	0.0
Iredell Memorial Hospital	1	3.2	4634	0.3
Frye Regional Medical Center	3	6.7	4895	0.4
Haywood Regional Medical Center	1	2.0	2528	0.5
Sampson Regional Medical Center	1	1.6	2068	0.6
Advent Health Hendersonville	1	1.5	2172	0.7
Wake Forest Baptist Health Wilkes Medica	1	1.3	1806	0.8
Novant Health Matthews Medical Center	2	2.6	3308	0.8
Northern Regional Hospital	1	1.1	1671	0.9
Halifax Regional Medical Center	2	2.2	3219	0.9
Lake Norman Regional Medical Center	2	1.9	2696	1.0
Pardee Hospital	4	3.6	4689	1.1
Nash Health Care Systems	5	4.4	6255	1.1
WakeMed Cary Hospital	5	3.5	4459	1.4
Vidant Edgecombe Hospital	3	2.1	1977	1.4
Duke Raleigh Hospital	8	5.3	5242	1.5
Wesley Long Hospital	3	2.0	2762	1.5
Vidant Roanoke Chowan Hospital	2	1.2	1745	1.6
Lenoir Memorial Hospital	3	1.8	2547	1.7
Johnston Health	5	2.3	2853	2.2
Rutherford Regional Medical Center	3	1.3	1881	2.3
Onslow Memorial Hospital	4	1.6	2126	2.6
Wilson Medical Center	4	1.2	1705	3.4
ARHS-Watauga Medical Center	2	0.9	1377	NC
Davis Regional Medical Center	0	0.6	742	NC
Novant Health Thomasville Medical Center	0	0.4	509	NC
Scotland Memorial Hospital	0	0.6	934	NC



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UCD = # Urinary Catheter Days
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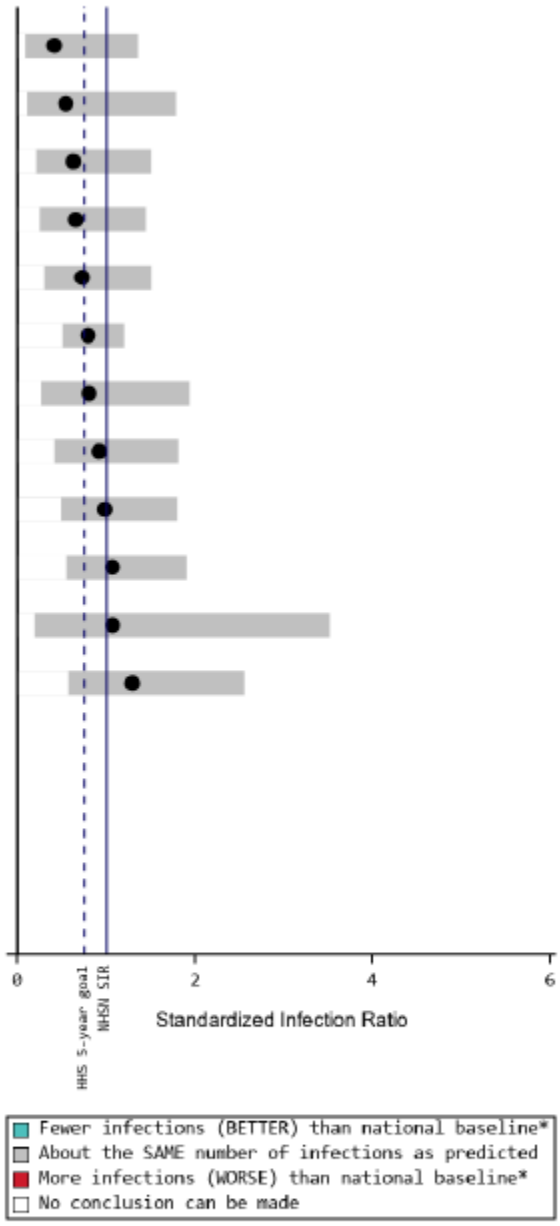
N = < 50 Urinary Catheter Days reported
*Significantly different than 2015 national baseline

CAUTI in Adult/Pediatric Medical, Surgical, and Medical/Surgical Wards and ICUs
Standardized Infection Ratios: January 1 – December 31, 2019
Hospital Group: Hospitals with 200 to 399 Beds

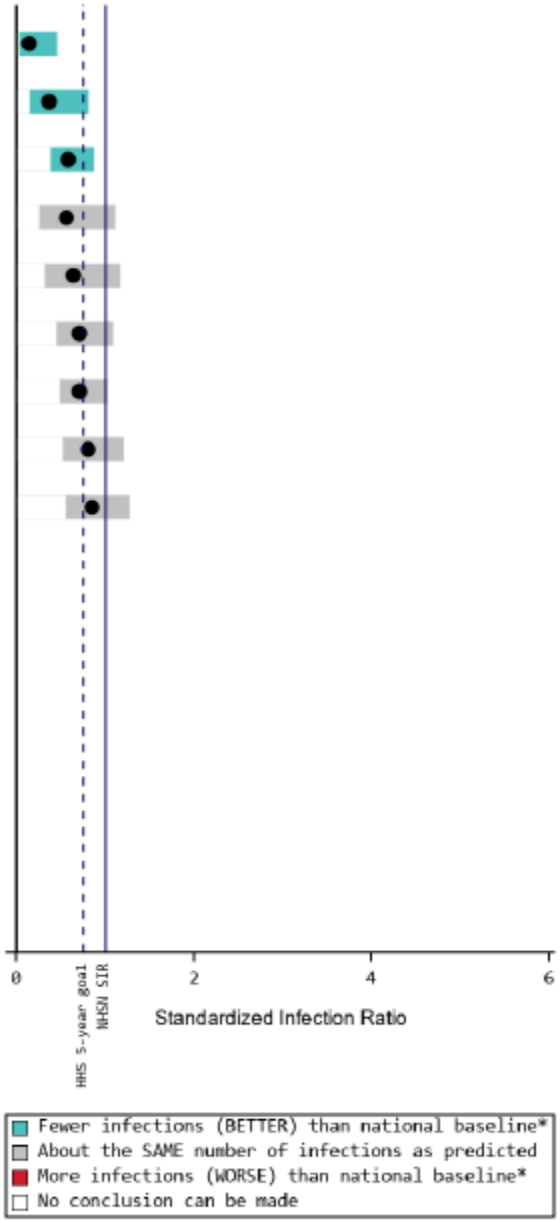
HOSPITAL	OBS	PRED	UCD	SIR
Alamance Regional Medical Center	2	4.9	3860	0.4
Atrium-Mercy	2	3.7	3786	0.5
Southeastern Regional Medical Center	4	6.4	6611	0.6
Wayne Memorial Hospital	5	7.7	7761	0.6
Duke Regional Hospital	6	8.3	6501	0.7
Moses Cone Hospital	20	25.4	13876	0.8
CarolinaEast Medical Center	4	5.0	5927	0.8
FirstHealth Moore Regional Hospital	7	7.7	8645	0.9
High Point Regional Health System	9	9.2	7239	1.0
Atrium-Pineville	10	9.4	9585	1.1
Novant Health Rowan Medical Center	2	1.9	2155	1.1
Carolinas Healthcare System Cleveland	7	5.4	6202	1.3



Data reported from adult/pediatric units as of May 1, 2020 .
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
NC = SIR not calculated for hospitals with <1 predicted infection
N = <50 Urinary Catheter Days
*Significantly different than 2015 national baseline

CAUTI in Adult/Pediatric Medical, Surgical, and Medical/Surgical Wards and ICUs
Standardized Infection Ratios: January 1 – December 31, 2019
Hospital Group: Hospitals with 400 or More Beds

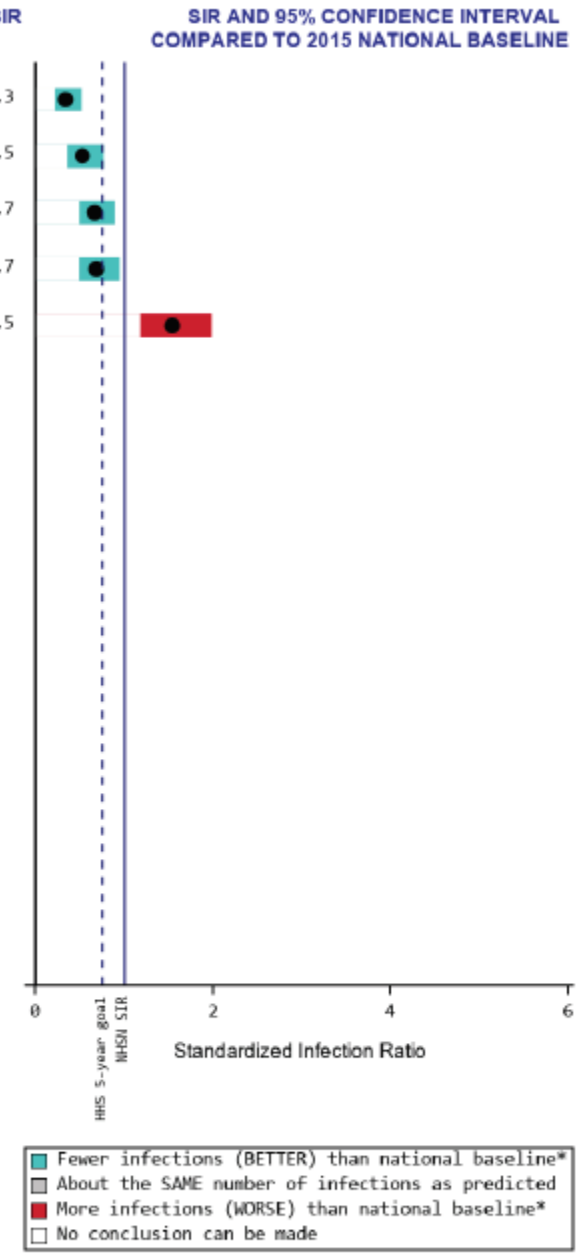
HOSPITAL	OBS	PRED	UCD	SIR
Gaston Memorial Hospital	2	14.9	10817	0.1
Atrium Health Cabarrus	5	13.9	14020	0.4
Mission Hospital	21	36.5	22583	0.6
Cape Fear Valley Health System	7	12.6	9971	0.6
Novant Health Presbyterian Medical	9	14.2	8855	0.6
New Hanover Regional Medical Center	19	27.1	19300	0.7
Rex Healthcare	27	38.4	27837	0.7
WakeMed	21	26.3	16515	0.8
Novant Health Forsyth Medical Center	22	26.0	15698	0.8



Data reported from adult/pediatric units as of May 1, 2020 .
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
NC = SIR not calculated for hospitals with <1 predicted infection
N = <50 Urinary Catheter Days
*Significantly different than 2015 national baseline

CAUTI in Adult/Pediatric Medical, Surgical, and Medical/Surgical Wards and ICUs
Standardized Infection Ratios: January 1 – December 31, 2019
Hospital Group: Hospitals with Primary Medical School Affiliation

HOSPITAL	OBS	PRED	UCD	SIR
Wake Forest University Baptist Medical	19	57.5	35135	0.3
Carolinas Medical Center	26	49.9	26705	0.5
Duke University Hospital	41	62.2	39489	0.7
UNC Health Care	34	50.1	30392	0.7
Vidant Medical Center	57	37.2	22486	1.5



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UCD = # Urinary Catheter Days
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*Significantly different than 2015 national baseline

C. Surgical Site Infections (SSI)

1. Abdominal Hysterectomies

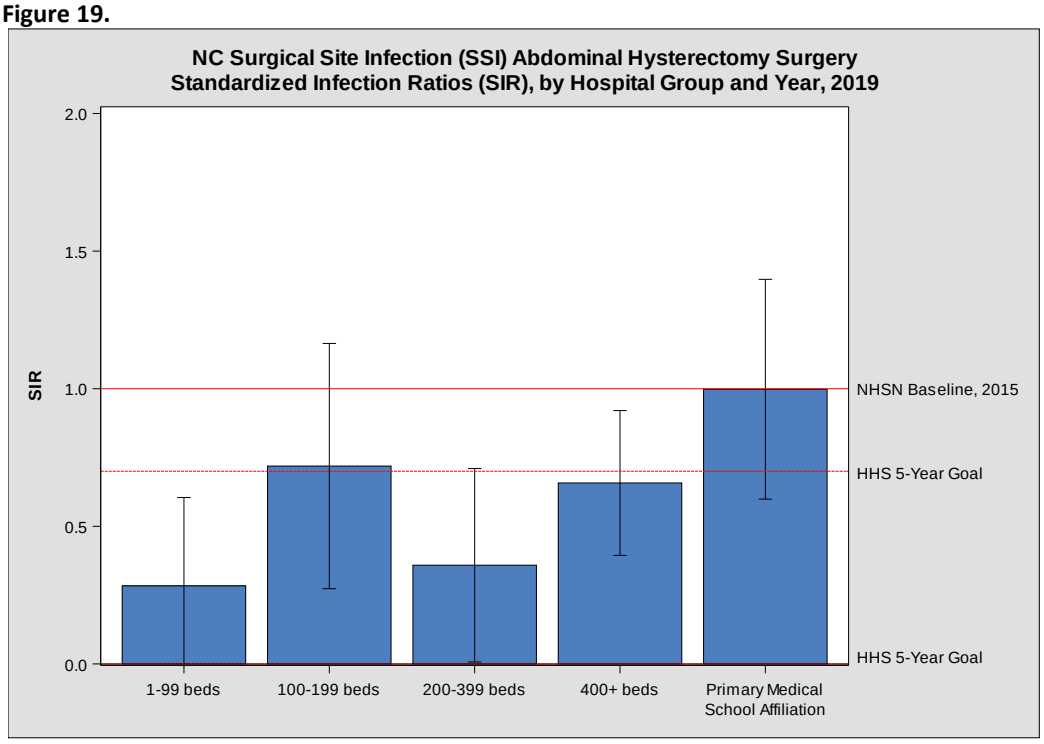
North Carolina 2019 SSI Highlights Post Abdominal Hysterectomy

- North Carolina reported 65 surgical site infections after inpatient abdominal hysterectomies performed on adults ≥ 18 years in North Carolina acute care hospitals, compared to the 98 infections predicted. This was better than the 2015 national experience.
- NC did not meet the U.S. Department of Health and Human Services 2020 goal to reduce SSIs nationally by 30% from the 2015 baseline experience
- In 2019, the most commonly identified organism from adult patients with SSI following inpatient abdominal hysterectomies was Other Gram-Negative Bacteria

Table 4. NC Surgical Site Infections following Abdominal Hysterectomies, 2019

Year	# Observed Infections	# Predicted Infections	How Does North Carolina Compare to the National Experience?
2019	65	98.36	★BETTER: Fewer infections than were predicted (better than the national experience)

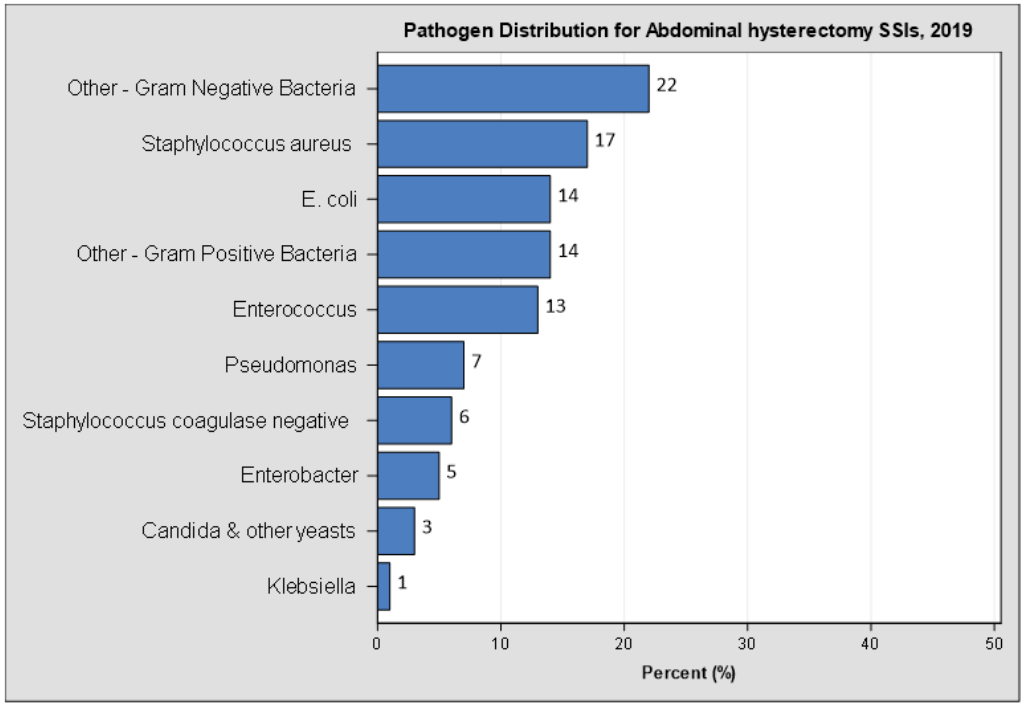
Figure 19.



Interpreting Figure 19:

- Hospitals with 1-99 beds , 200-399 beds, and hospitals with greater than 400 beds saw fewer SSIs following abdominal hysterectomies than predicted, performing BETTER than the 2015 national experience
- All other hospital sized groups reported the same number of SSIs following abdominal hysterectomies than predicted, performing the SAME as the 2015 national experience

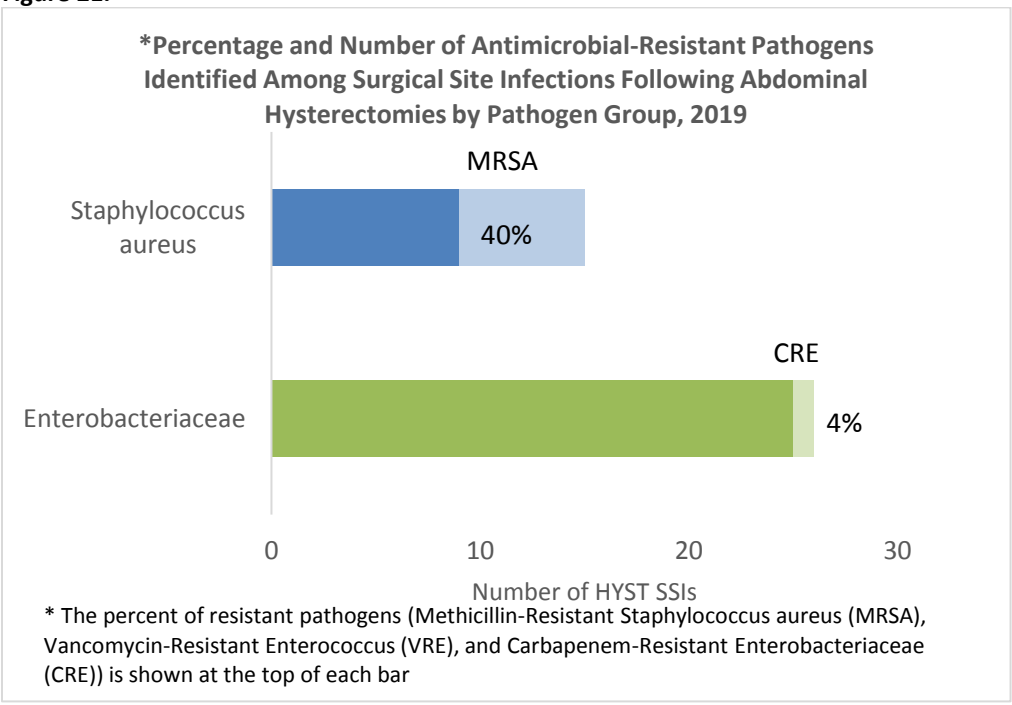
Figure 20.



Interpreting Figure 20:

- Other gram-negative bacteria (18%) were the most commonly reported pathogens among SSIs following abdominal hysterectomies

Figure 21.

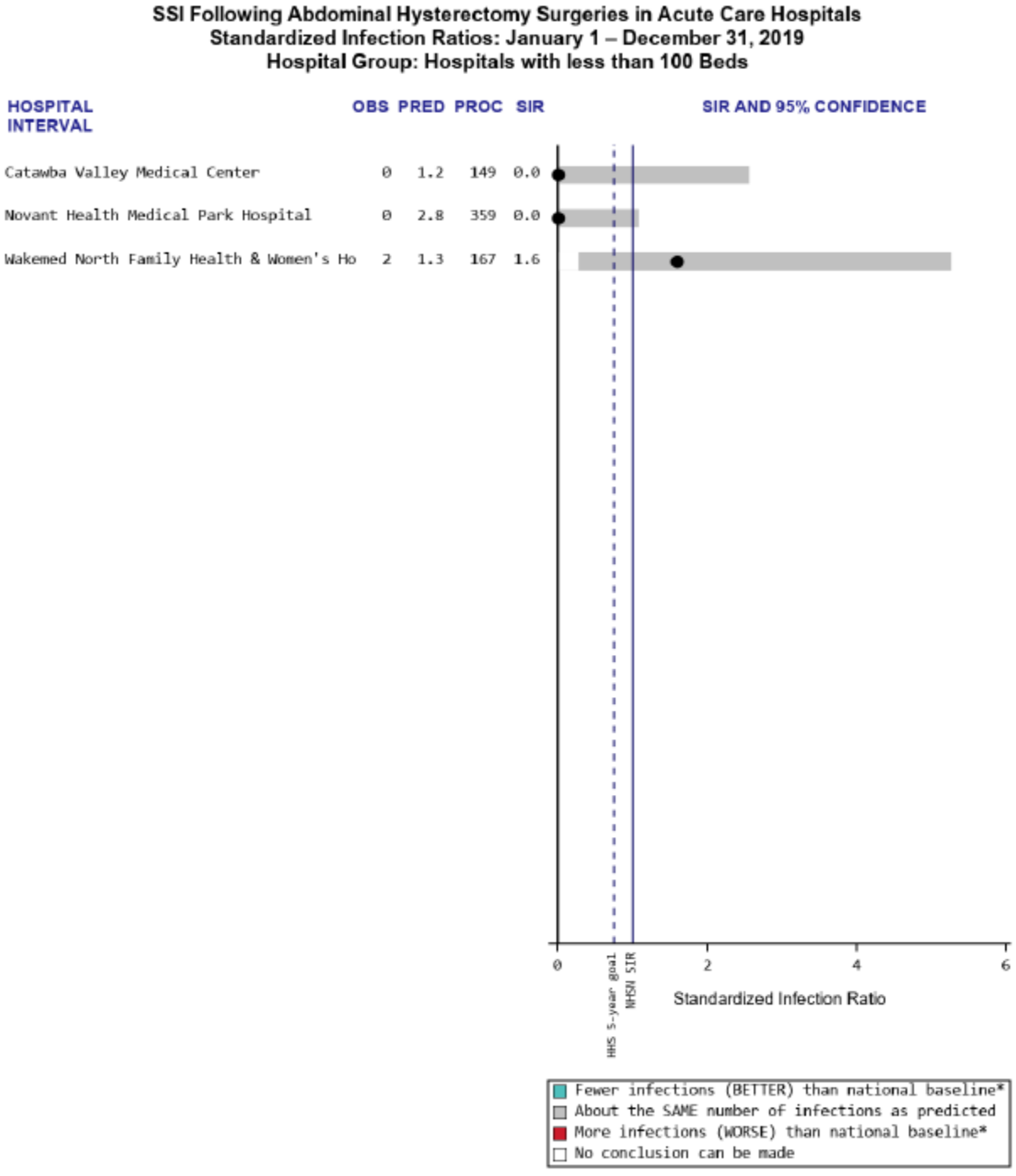


* The percent of resistant pathogens (Methicillin-Resistant Staphylococcus aureus (MRSA), Vancomycin-Resistant Enterococcus (VRE), and Carbapenem-Resistant Enterobacteriaceae (CRE)) is shown at the top of each bar

Interpreting Figure 21:

- In 2019, 40% of *Staphylococcus aureus* identified among SSIs following abdominal hysterectomies surgeries were resistant to methicillin
- 4% of Enterobacteriaceae identified were resistant to carbapenems

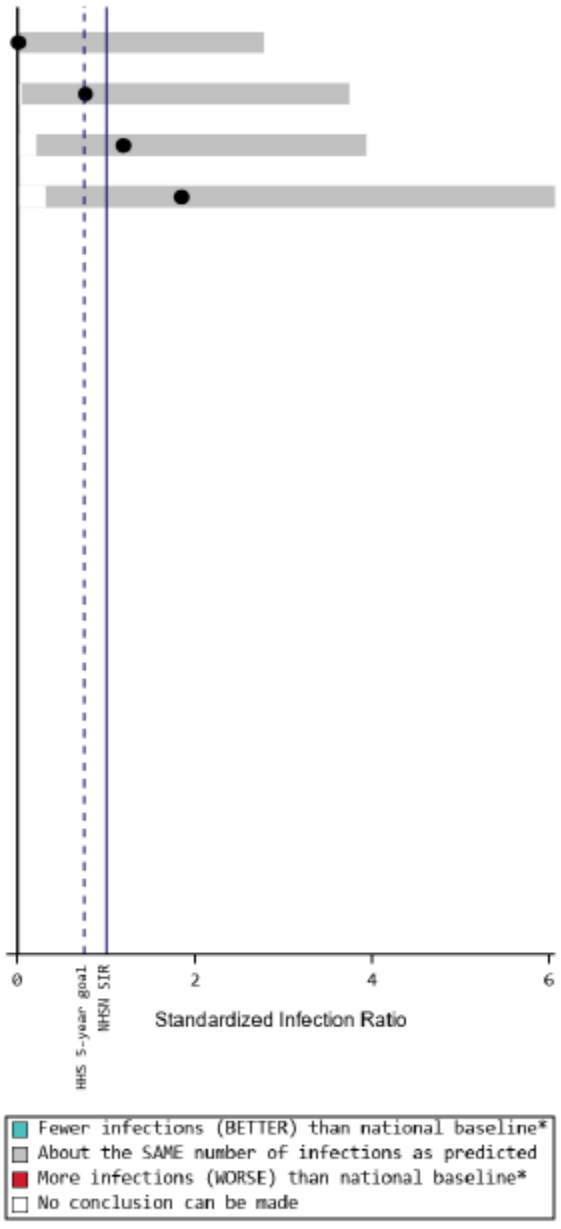
The following SIR plots summarize SSI HYST infection data for North Carolina hospitals by hospital groups (Appendix E).



Data reported from adult/pediatric units as of May 1, 2020 .
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 <50 catheter days
NC = SIR not calculated for hospitals with <1 predicted infection
*Significantly different than 2015 national baseline

SSI Following Abdominal Hysterectomy Surgeries in Acute Care Hospitals
Standardized Infection Ratios: January 1 – December 31, 2019
Hospital Group: Hospitals with 100 to 199 Beds

HOSPITAL INTERVAL	OBS	PRED	PROC	SIR
Atrium Health University City	0	1.1	130	0.0
Novant Health Huntersville	1	1.3	159	0.8
Novant Health Matthews Medical Center	2	1.7	208	1.2
WakeMed Cary Hospital	2	1.1	133	1.8



Data reported from adult/pediatric units as of May 1, 2020 .
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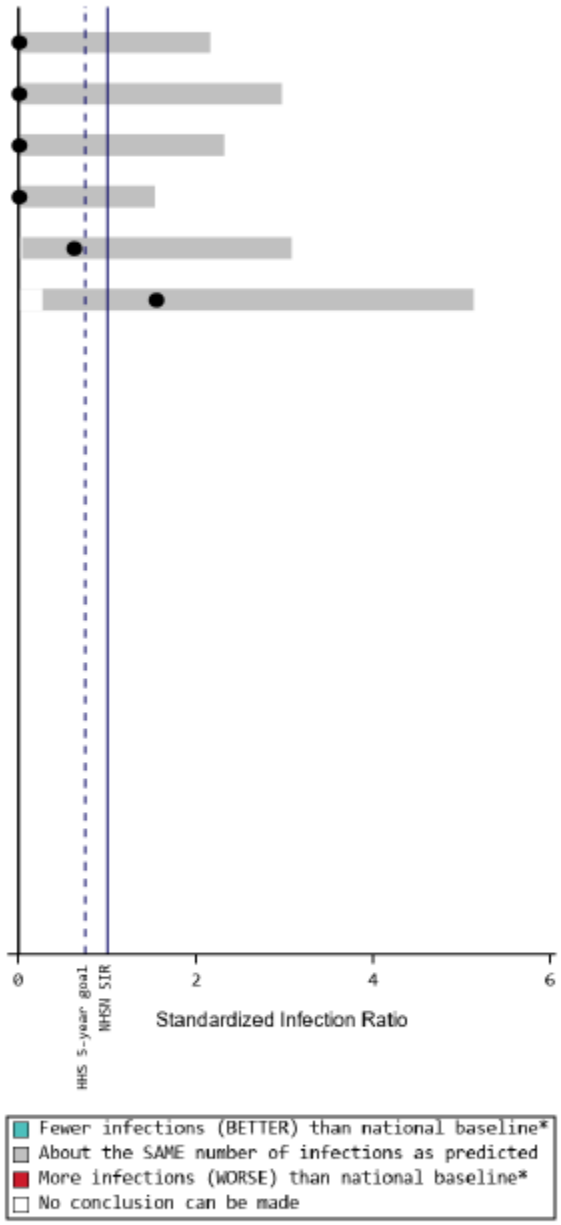
PRED = # infections statistically 'predicted' by national baseline
PROC = # of Procedures
SIR = Standardized infection ratio (OBS/PRED # of infections)
NA = Data not shown for hospitals with <50 catheter days
NC = SIR not calculated for hospitals with <1 predicted infection
*Significantly different than 2015 national baseline

SSI Following Abdominal Hysterectomy Surgeries in Acute Care Hospitals
Standardized Infection Ratios: January 1 – December 31, 2019
Hospital Group: Hospitals with 200 to 399 Beds

HOSPITAL INTERVAL	OBS	PRED	PROC	SIR
CarolinaEast Medical Center	0	1.4	163	0.0
Wayne Memorial Hospital	0	1.0	117	0.0
Duke Regional Hospital	0	1.3	158	0.0
FirstHealth Moore Regional Hospital	0	2.0	224	0.0
Atrium-Pineville	1	1.6	199	0.6
High Point Regional Health System	2	1.3	134	1.6



Data reported from adult/pediatric units as of May 1, 2020 .
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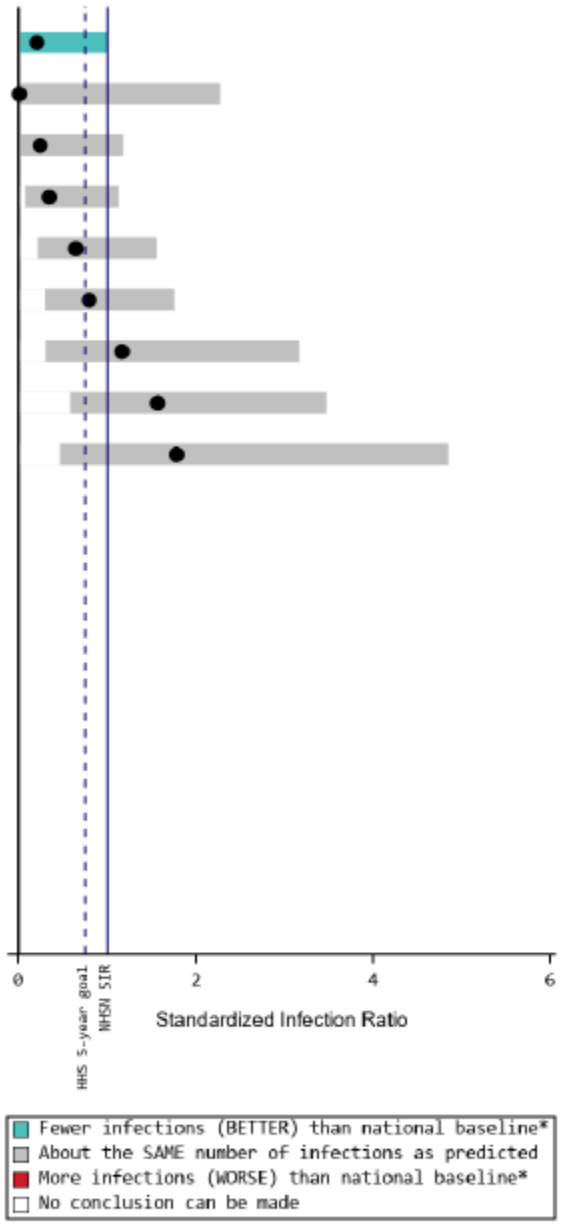
PRED = # infections statistically 'predicted' by national baseline
PROC = # of Procedures
SIR = Standardized infection ratio (OBS/PRED # of infections)
NA = Data not shown for hospitals with <50 catheter days
NC = SIR not calculated for hospitals with <1 predicted infection
*Significantly different than 2015 national baseline

SSI Following Abdominal Hysterectomy Surgeries in Acute Care Hospitals
Standardized Infection Ratios: January 1 – December 31, 2019
Hospital Group: Hospitals with 400 or More Beds

HOSPITAL INTERVAL	OBS	PRED	PROC	SIR
Rex Healthcare	1	5.0	616	0.2
WakeMed	0	1.3	151	0.0
Novant Health Forsyth Medical Center	1	4.2	516	0.2
Mission Hospital	2	5.9	686	0.3
New Hanover Regional Medical Center	4	6.3	745	0.6
Novant Health Presbyterian Medical	5	6.3	756	0.8
Cape Fear Valley Health System	3	2.6	270	1.2
Atrium Health Cabarrus	5	3.2	374	1.6
Gaston Memorial Hospital	3	1.7	197	1.8



Data reported from adult/pediatric units as of May 1, 2020 .
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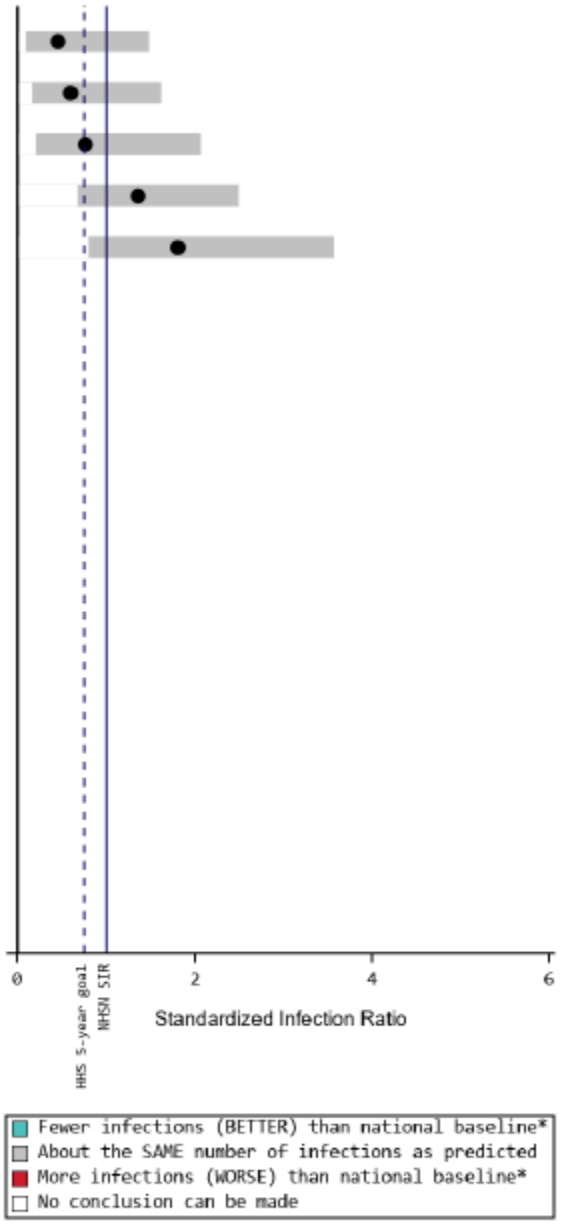
PRED = # infections statistically 'predicted' by national baseline
PROC = # of Procedures
SIR = Standardized infection ratio (OBS/PRED # of infections)
NA = Data not shown for hospitals with <50 catheter days
NC = SIR not calculated for hospitals with <1 predicted infection
*Significantly different than 2015 national baseline

SSI Following Abdominal Hysterectomy Surgeries in Acute Care Hospitals
Standardized Infection Ratios: January 1 – December 31, 2019
Hospital Group: Hospitals with Primary Medical School Affiliation

HOSPITAL INTERVAL	OBS	PRED	PROC	SIR
Carolinas Medical Center	2	4.5	489	0.4
Duke University Hospital	3	5.1	604	0.6
Wake Forest University Baptist Medical	3	4.0	416	0.8
UNC Health Care	9	6.7	691	1.4
Vidant Medical Center	7	3.9	423	1.8



Data reported from adult/pediatric units as of May 1, 2020 .
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 <50 catheter days
NC = SIR not calculated for hospitals with <1 predicted infection
*Significantly different than 2015 national baseline

2. Colon Surgeries

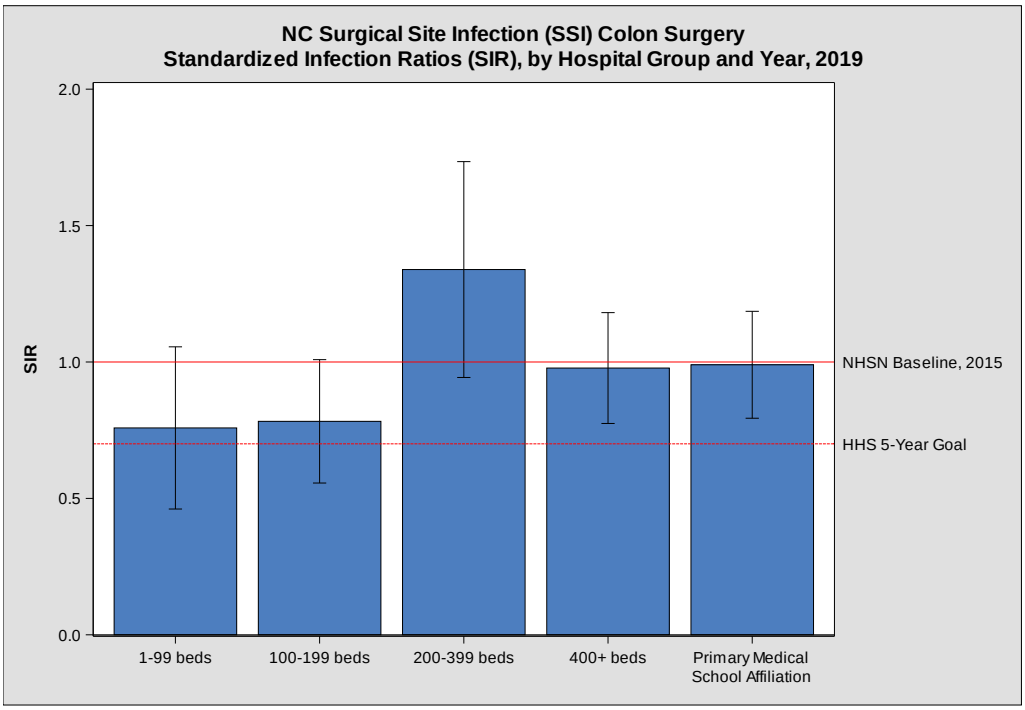
North Carolina 2019 SSI Highlights Post Colon Surgery

- Among inpatient colon surgeries performed on adults ≥ 18 years, North Carolina hospitals reported 304 infections, compared to the 320 infections which were predicted.
- There were fewer COLO SSIs than predicted by the 2015 national experience.
- The U.S. Department of Health and Human Services set a goal to reduce SSIs nationally by 30% from the baseline experience in 2015 by 2020; North Carolina has not met this goal for SSIs following colon surgeries.
- The most commonly identified organisms isolated from colon surgery SSI patients were and *Enterococcus* and *E. coli*.

Table 5. NC Surgical Site Infections following colon surgeries, 2019

Year	# Observed Infections	# Predicted Infections	How Does North Carolina Compare to the National Experience?
2019	304	320.3	= SAME: about the same number of infections as were predicted (same as the national experience)

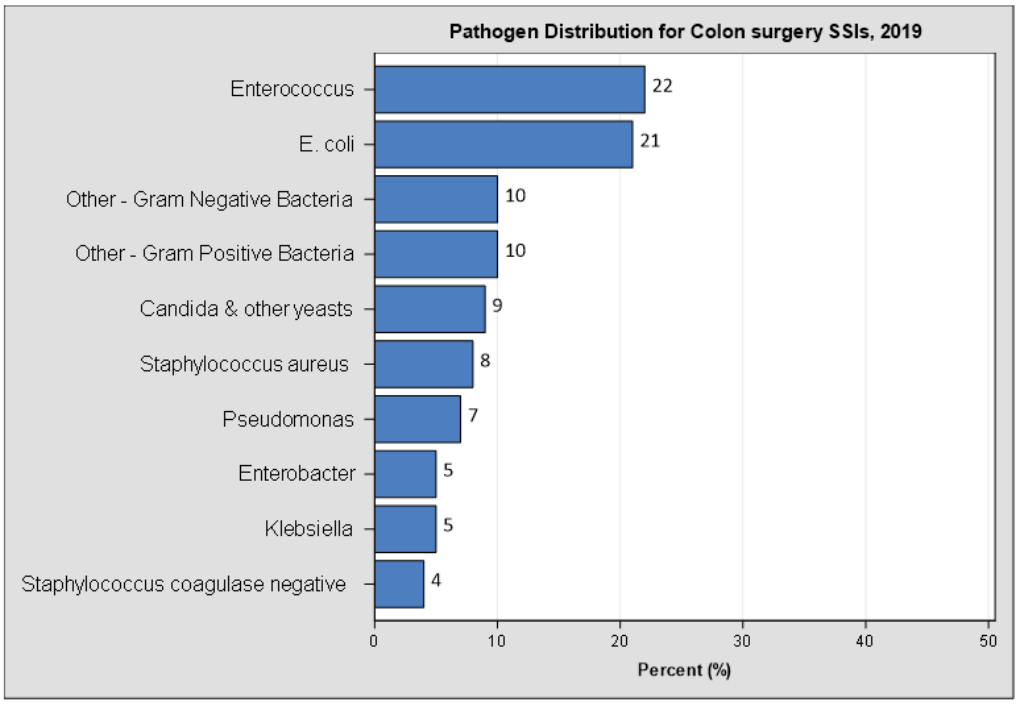
Figure 22.



Interpreting Figure 22:

- In 2019, all hospitals had the same number of SSIs following colon surgeries than predicted, performing the SAME as the 2015 national experience

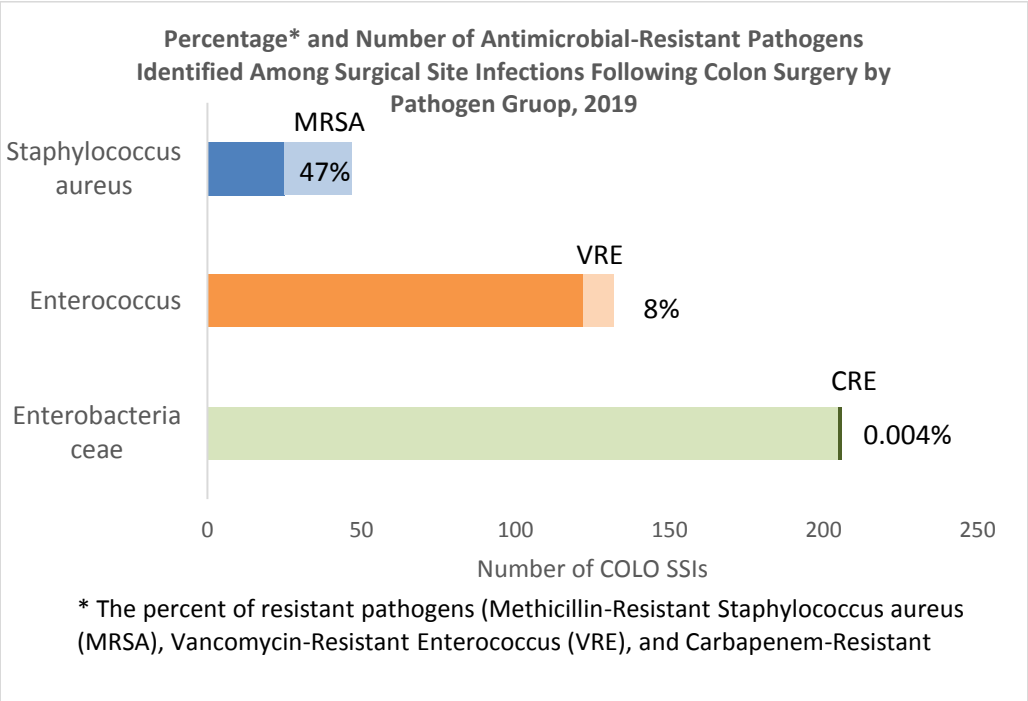
Figure 23.



Interpreting Figure 23:

- *Enterococcus* (20%) followed by *E. coli* (19%) were the most commonly reported pathogens isolated from patients with surgical site infections following colon surgeries

Figure 24.



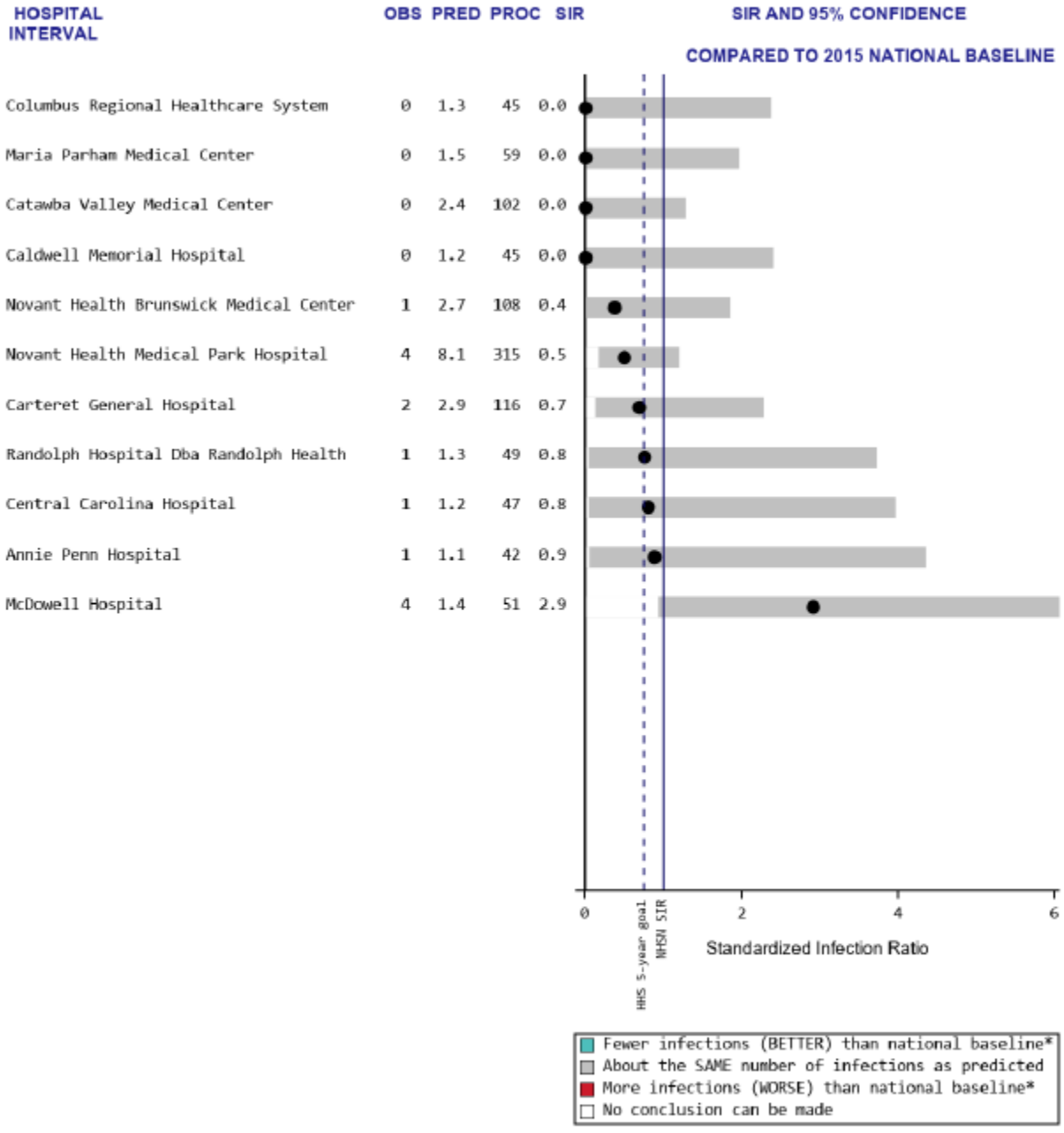
* The percent of resistant pathogens (Methicillin-Resistant Staphylococcus aureus (MRSA), Vancomycin-Resistant Enterococcus (VRE), and Carbapenem-Resistant

Interpreting Figure 24:

- In 2019, 47% of *Staphylococcus aureus* identified among SSIs following colon surgeries were resistant to methicillin
- 8% of *Enterococcus* identified among SSIs following colon surgeries were Vancomycin resistant
- Only 0.004% of Enterobacteriaceae identified among SSIs following colon surgeries were resistant to carbapenems

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

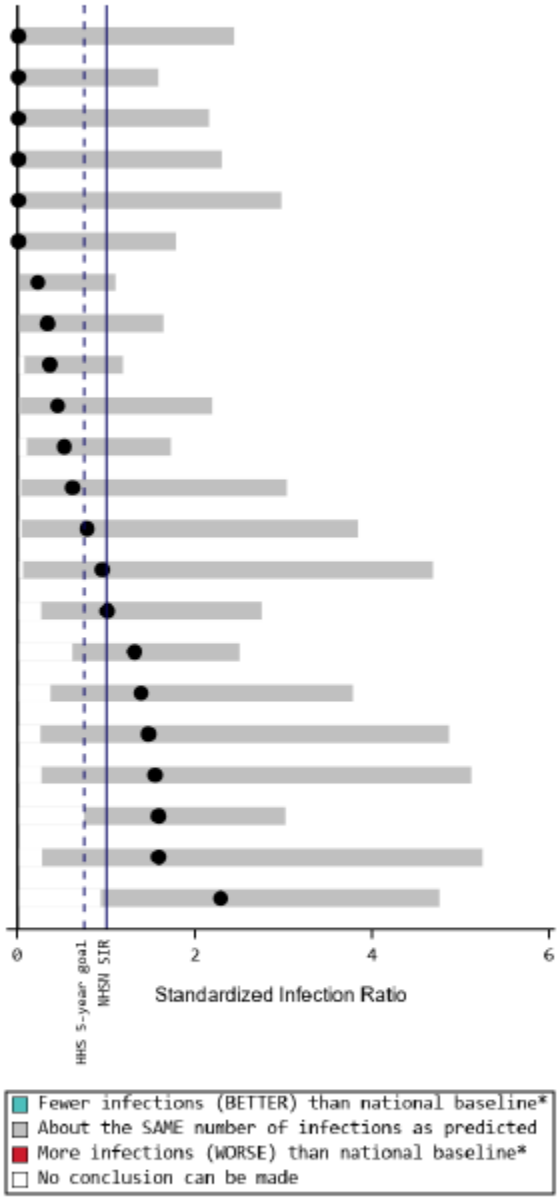
SSI following Colon Surgeries in Acute Care Hospitals
Standardized Infection Ratios: January 1 – December 31, 2019
Hospital Group: Hospitals with less than 100 Beds



Data reported as of May 1, 2020 .
OBS = # infections observed
PRED = # infections statistically 'predicted' by national baseline
PROC = # 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

SSI following Colon Surgeries in Acute Care Hospitals
Standardized Infection Ratios: January 1 – December 31, 2019
Hospital Group: Hospitals with 100 to 199 Beds

HOSPITAL INTERVAL	OBS	PRED	PROC	SIR
Haywood Regional Medical Center	0	1.2	48	0.0
Frye Regional Medical Center	0	1.9	73	0.0
Johnston Health	0	1.4	53	0.0
Scotland Memorial Hospital	0	1.3	47	0.0
Atrium Health Lincoln	0	1.0	38	0.0
Wilson Medical Center	0	1.7	63	0.0
Novant Health Huntersville	1	4.5	179	0.2
Pardee Hospital	1	3.0	120	0.3
WakeMed Cary Hospital	2	5.6	215	0.4
Lenoir Memorial Hospital	1	2.3	78	0.4
Duke Raleigh Hospital	2	3.8	145	0.5
Nash Health Care Systems	1	1.6	60	0.6
Novant Health Thomasville Medical Center	1	1.3	50	0.8
Advent Health Hendersonville	1	1.1	38	1.0
Atrium-Union	3	3.0	108	1.0
Novant Health Matthews Medical Center	8	6.1	231	1.3
Onslow Memorial Hospital	3	2.2	76	1.4
Rutherford Regional Medical Center	2	1.4	50	1.5
Atrium Health University City	2	1.3	47	1.5
Wesley Long Hospital	8	5.0	197	1.6
Northern Regional Hospital	2	1.3	49	1.6
Iredell Memorial Hospital	6	2.6	103	2.3



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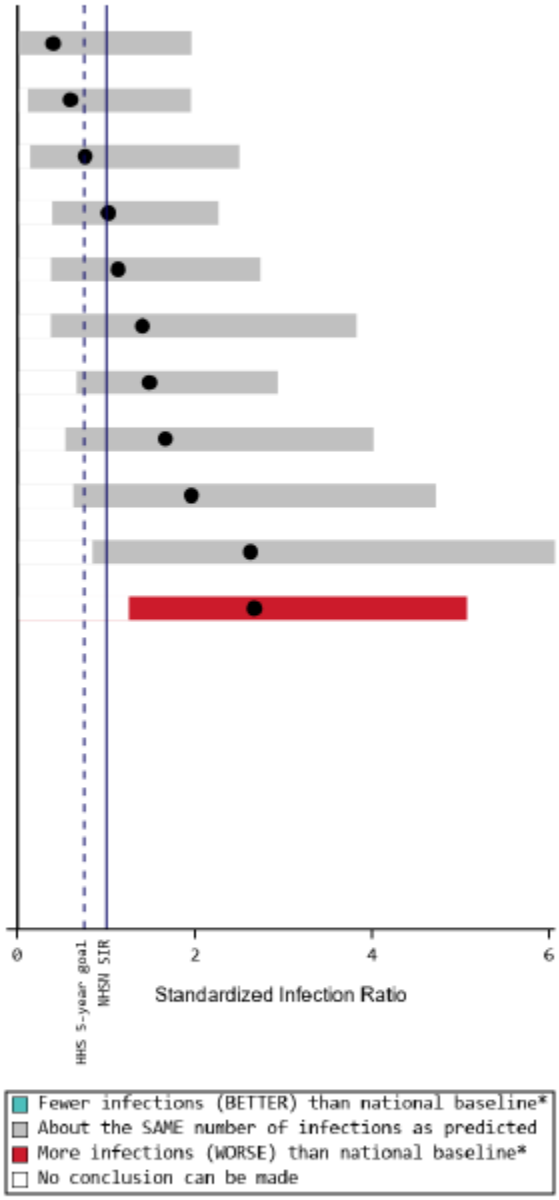
NA = Data not shown for hospitals with <20 procedures
NC = SIR not calculated for hospitals with <1 predicted infection
*Significantly different than 2015 national baseline

SSI following Colon Surgeries in Acute Care Hospitals
Standardized Infection Ratios: January 1 – December 31, 2019
Hospital Group: Hospitals with 200 to 399 Beds

HOSPITAL INTERVAL	OBS	PRED	PROC	SIR
Novant Health Rowan Medical Center	1	2.5	97	0.4
Duke Regional Hospital	2	3.4	125	0.6
CarolinaEast Medical Center	2	2.7	102	0.8
Atrium-Pineville	5	4.9	184	1.0
High Point Regional Health System	4	3.5	131	1.1
Southeastern Regional Medical Center	3	2.1	74	1.4
FirstHealth Moore Regional Hospital	7	4.7	185	1.5
Alamance Regional Medical Center	4	2.4	90	1.7
Wayne Memorial Hospital	4	2.0	76	2.0
Carolinas Healthcare System Cleveland	4	1.5	59	2.6
Moses Cone Hospital	8	3.0	107	2.7



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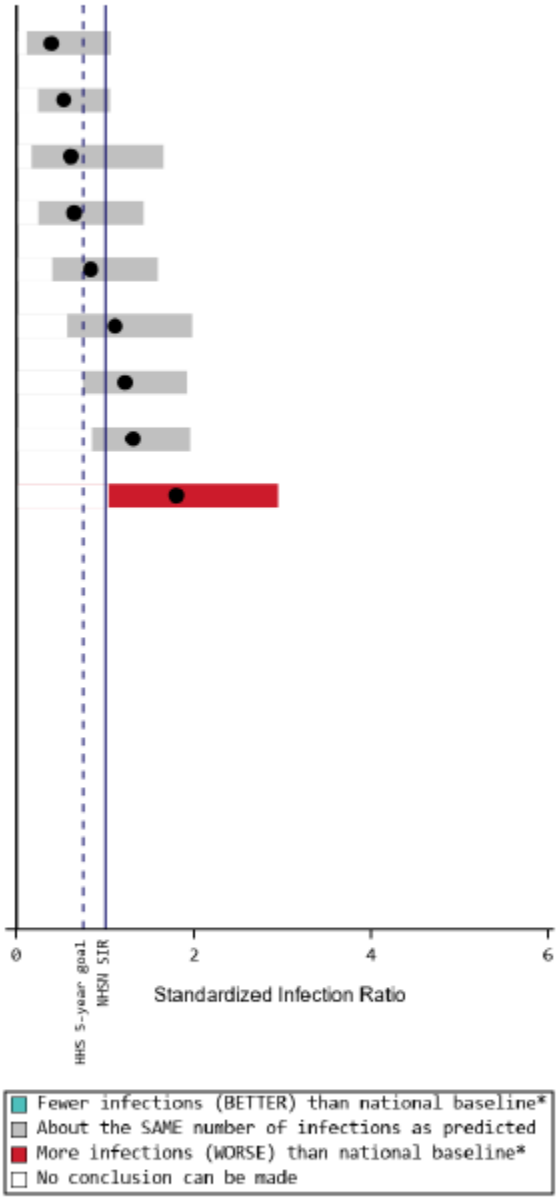
NA = Data not shown for hospitals with <20 procedures
NC = SIR not calculated for hospitals with <1 predicted infection
*Significantly different than 2015 national baseline

SSI following Colon Surgeries in Acute Care Hospitals
Standardized Infection Ratios: January 1 – December 31, 2019
Hospital Group: Hospitals with 400 or More Beds

HOSPITAL INTERVAL	OBS	PRED	PROC	SIR
Cape Fear Valley Health System	3	7.8	261	0.4
New Hanover Regional Medical Center	7	13.3	477	0.5
Gaston Memorial Hospital	3	5.0	178	0.6
Novant Health Presbyterian Medical	5	7.8	297	0.6
Novant Health Forsyth Medical Center	8	9.6	358	0.8
Atrium Health Cabarrus	10	9.0	328	1.1
Mission Hospital	17	14.0	505	1.2
Rex Healthcare	22	16.8	617	1.3
WakeMed	14	7.8	263	1.8

SIR AND 95% CONFIDENCE

COMPARED TO 2015 NATIONAL BASELINE



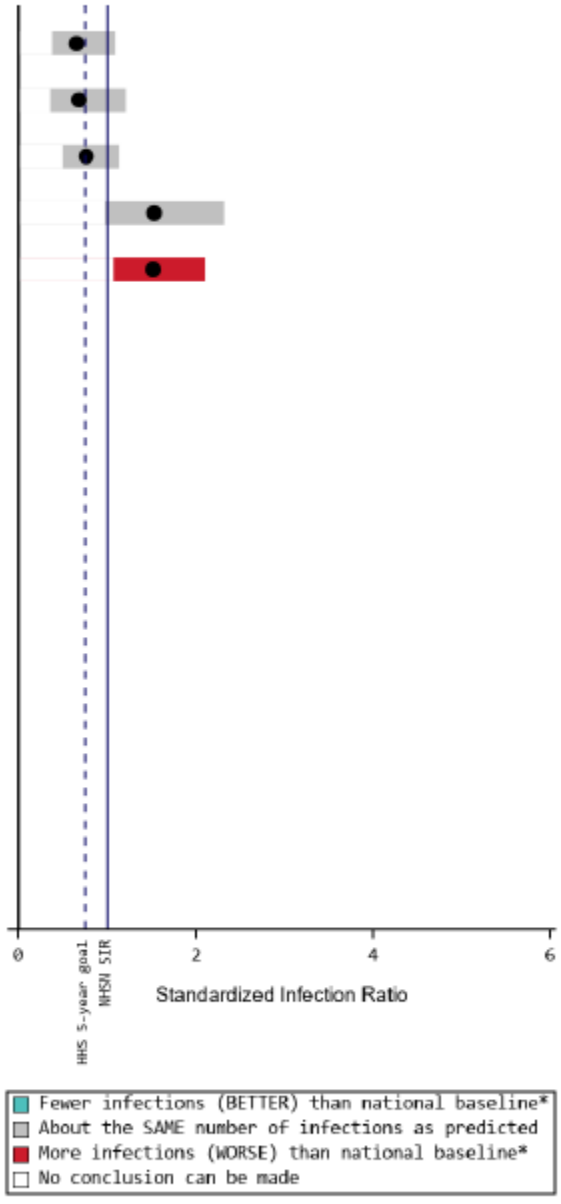
Data reported as of May 1, 2020 .
OBS = # infections observed
PRED = # infections statistically 'predicted' by national baseline
PROC = # procedures
SIR = Standardized infection ratio (OBS/PRED # of infections)
NA = Data not shown for hospitals with <20 procedures
NC = SIR not calculated for hospitals with <1 predicted infection
*Significantly different than 2015 national baseline

SSI following Colon Surgeries in Acute Care Hospitals
Standardized Infection Ratios: January 1 – December 31, 2019
Hospital Group: Hospitals with Primary Medical School Affiliation

HOSPITAL INTERVAL	OBS	PRED	PROC	SIR
Carolinas Medical Center	13	20.1	668	0.6
Wake Forest University Baptist Medical	10	14.8	498	0.7
Duke University Hospital	22	29.1	1024	0.8
Vidant Medical Center	20	13.1	451	1.5
UNC Health Care	33	21.8	725	1.5

SIR AND 95% CONFIDENCE

COMPARED TO 2015 NATIONAL BASELINE



Data reported as of May 1, 2020 .
OBS = # infections observed
PRED = # infections statistically 'predicted' by national baseline
PROC = # 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)

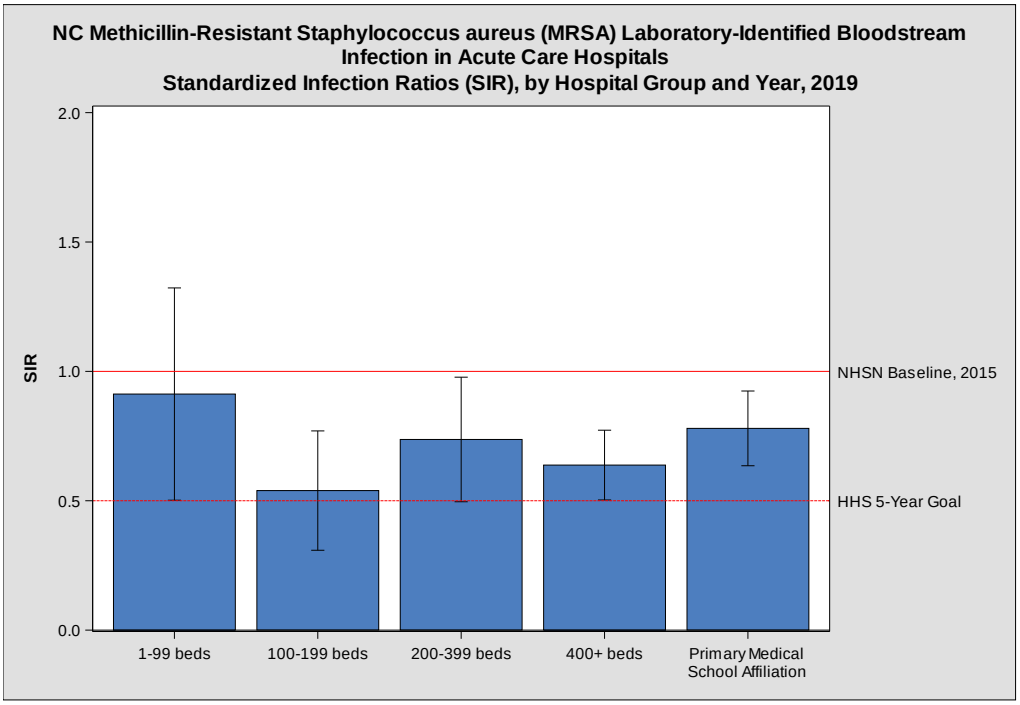
North Carolina 2019 MRSA LabID Highlights

- In 2019 North Carolina hospitals reported 274 MRSA LabID events, compared to the 387 MRSA LabID events which were predicted. This is better than predicted by the 2015 national experience.
- The U.S. Department of Health and Human Services set a goal to reduce MRSA nationally by 50% from the baseline experience by 2020; North Carolina has not yet met this goal.

Table 6. NC Methicillin-Resistant Staphylococcus Aureus Laboratory-Identified events, 2019

Year	# Observed Events	# Predicted Events	How Does North Carolina Compare to the National Experience?
2019	274	387.094	★BETTER: Fewer infections than were predicted (better than the national experience)

Figure 25.



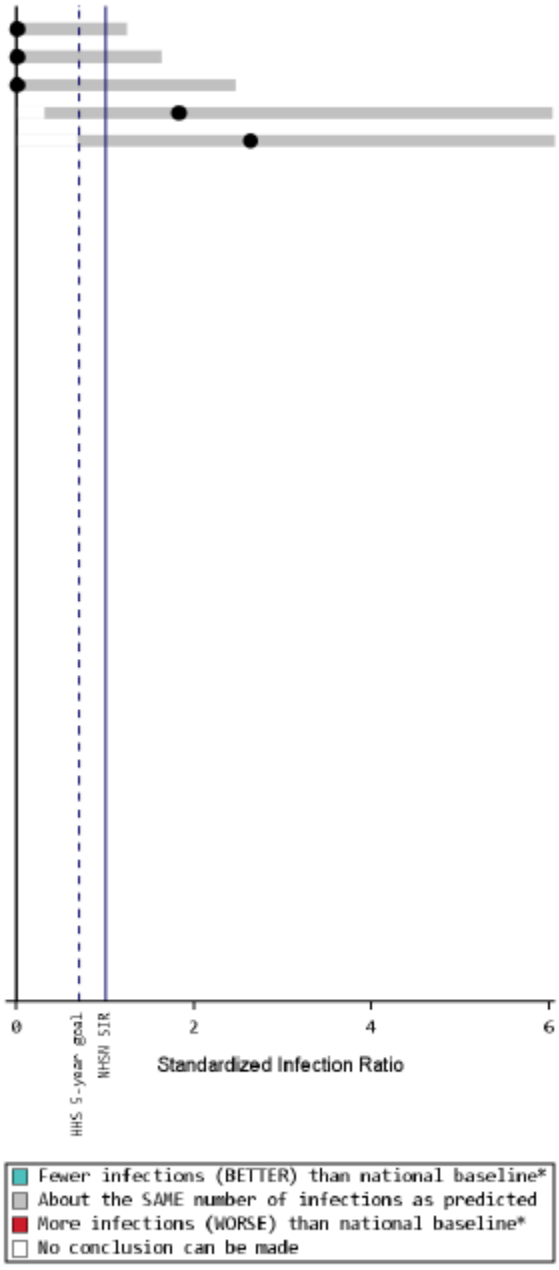
Interpreting Figure 25:

- Hospitals with 1-99 beds performed the SAME as the national experience, with about the same number of MRSA LabID events as predicted
- All other hospital size groups reported fewer number of events as predicted, performing BETTER as the 2015 national experience

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

MRSA in Acute Care Hospitals
Standardized Infection Ratios: January 1 – December 31, 2019
Hospital Group: Hospitals with less than 100 Beds

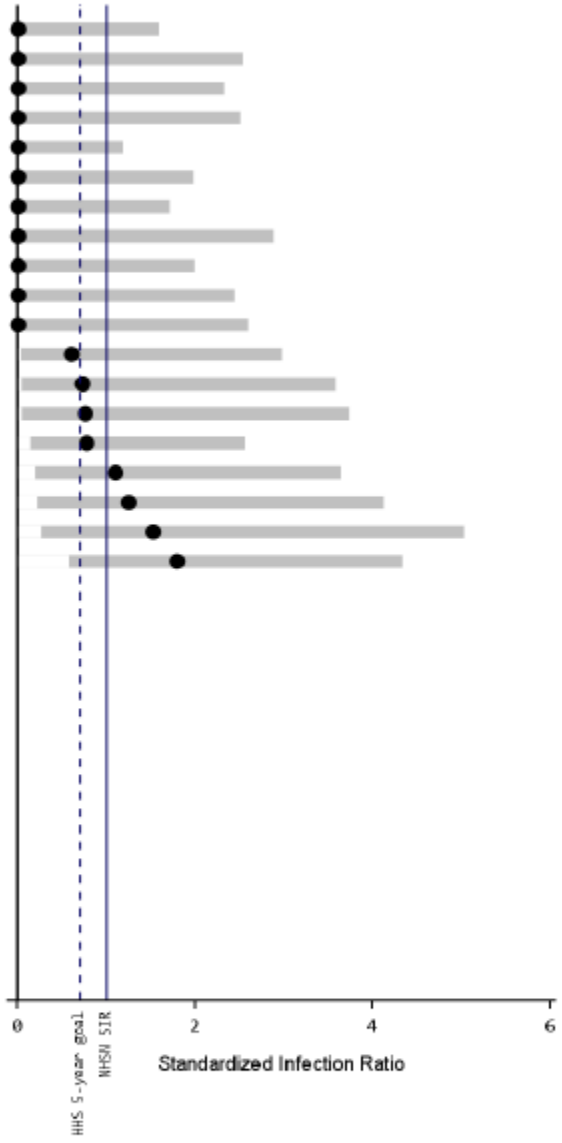
HOSPITAL	OBS	PRED	PD	SIR
Vidant Beaufort Hospital	0	2.4	48609	0.0
Catawba Valley Medical Center	0	1.8	53803	0.0
Annie Penn Hospital	0	1.2	19749	0.0
Columbus Regional Healthcare System	2	1.1	19826	1.8
Randolph Hospital Dba Randolph Health	3	1.1	18438	2.6
McDowell Hospital	0	0.3	9517	NC
Cherokee Indian Hospital	0	0.1	3887	NC
Dlp - Harris Regional Hospital	0	0.4	13814	NC
Sentara Albemarle Medical Center	1	0.8	18299	NC
Martin General Hospital	0	0.1	4717	NC
Maria Parham Medical Center	1	0.8	17172	NC
Granville Medical Center	0	0.2	7773	NC
Carteret General Hospital	0	0.8	26929	NC
Novant Health Brunswick Medical Center	0	0.6	20653	NC
Vidant Duplin Hospital	1	0.7	11961	NC
Central Carolina Hospital	1	0.8	14222	NC
Kings Mountain Hospital	0	0.0	1537	NC
Kings Mountain Hospital	0	0.1	3269	NC
Caldwell Memorial Hospital	3	0.9	20493	NC
Person Memorial Hospital	0	0.1	3915	NC
Wake Forest Baptist Health-Lexington	0	0.9	15424	NC
Novant Health Charlotte Orthopedic Hosp	0	0.1	8271	NC
Novant Health Medical Park Hospital	1	0.1	4472	NC
Betsy Johnson Hospital	2	0.5	15022	NC
Hugh Chatham Memorial Hospital	0	0.4	8732	NC
Carolinas Healthcare System Anson	0	0.0	1120	NC
North Carolina Specialty Hospital	0	0.1	3669	NC
Wake Forest Baptist Health-Davie Medica	0	0.2	5678	NC
Johnston Health Clayton	0	0.4	14324	NC
Cape Fear Valley Hoke Hospital	0	0.1	4943	NC
Novant Health Kernersville Medical Cent	2	0.4	13571	NC
Wakemed North Family Health & Women's H	0	0.2	10889	NC
Central Harnett Hospital	1	0.2	6191	NC
Novant Health Clemmons Medical Center	0	0.2	5813	NC
Novant Health Mint Hill Medical Center	0	0.3	10155	NC



Data reported as of May 1, 2020 .
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

MRSA in Acute Care Hospitals
Standardized Infection Ratios: January 1 – December 31, 2019
Hospital Group: Hospitals with 100 to 199 Beds

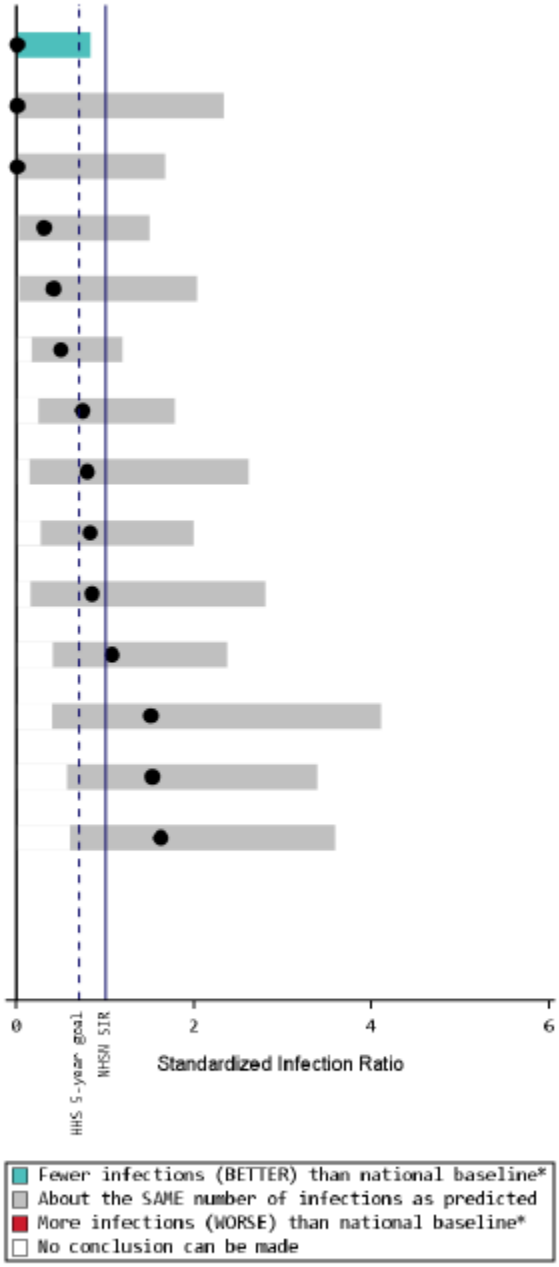
HOSPITAL	OBS	PRED	PD	SIR
WakeMed Cary Hospital	0	1.9	53772	0.0
Haywood Regional Medical Center	0	1.2	20781	0.0
Lenoir Memorial Hospital	0	1.3	26897	0.0
Iredell Memorial Hospital	0	1.2	38170	0.0
Nash Health Care Systems	0	2.5	49540	0.0
Johnston Health	0	1.5	34690	0.0
Novant Health Matthews Medical Center	0	1.8	52851	0.0
Scotland Memorial Hospital	0	1.0	26022	0.0
Novant Health Huntersville	0	1.5	38131	0.0
Atrium Health Lincoln	0	1.2	20359	0.0
Halifax Regional Medical Center	0	1.2	20983	0.0
Atrium-Union	1	1.7	35747	0.6
Atrium Health University City	1	1.4	30802	0.7
Pardee Hospital	1	1.3	35413	0.8
Duke Raleigh Hospital	2	2.6	54799	0.8
Wesley Long Hospital	2	1.8	43733	1.1
Women's Hospital	2	1.6	51596	1.2
Onslow Memorial Hospital	2	1.3	31908	1.5
Frye Regional Medical Center	4	2.2	34435	1.8
Rutherford Regional Medical Center	1	0.7	11750	NC
Advent Health Hendersonville	1	0.2	10045	NC
ARHS-Watauga Medical Center	1	0.8	15183	NC
Davis Regional Medical Center	0	0.6	12890	NC
Vidant Roanoke Chowan Hospital	1	0.4	13134	NC
Vidant Edgecombe Hospital	0	0.8	13923	NC
Novant Health Thomasville Medical Cente	0	0.6	16292	NC
Sampson Regional Medical Center	0	0.5	11239	NC
Northern Regional Hospital	0	0.9	17351	NC
Lake Norman Regional Medical Center	0	0.5	17595	NC
Wilson Medical Center	1	0.9	30342	NC
Atrium Health Stanly	1	0.6	13632	NC
UNC Rockingham Health	0	0.6	12767	NC
Wake Forest Baptist Health Wilkes Medic	0	0.5	12837	NC



Data reported as of May 1, 2020 .
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

MRSA in Acute Care Hospitals
Standardized Infection Ratios: January 1 – December 31, 2019
Hospital Group: Hospitals with 200 to 399 Beds

HOSPITAL	OBS	PRED	PD	SIR
CarolinaEast Medical Center	0	3.6	66753	0.0
Cherry Hospital	0	1.3	84948	0.0
Broughton Hospital	0	1.8	91788	0.0
Southeastern Regional Medical Center	1	3.3	59294	0.3
Alamance Regional Medical Center	1	2.4	44722	0.4
Moses Cone Hospital	4	8.1	121836	0.5
Duke Regional Hospital	4	5.4	79310	0.7
Carolinas Healthcare System Cleveland	2	2.5	46276	0.8
High Point Regional Health System	4	4.9	70898	0.8
Atrium-Mercy	2	2.4	50142	0.8
FirstHealth Moore Regional Hospital	5	4.7	94573	1.1
Novant Health Rowan Medical Center	3	2.0	41134	1.5
Atrium-Pineville	5	3.3	75085	1.5
Wayne Memorial Hospital	5	3.1	52322	1.6

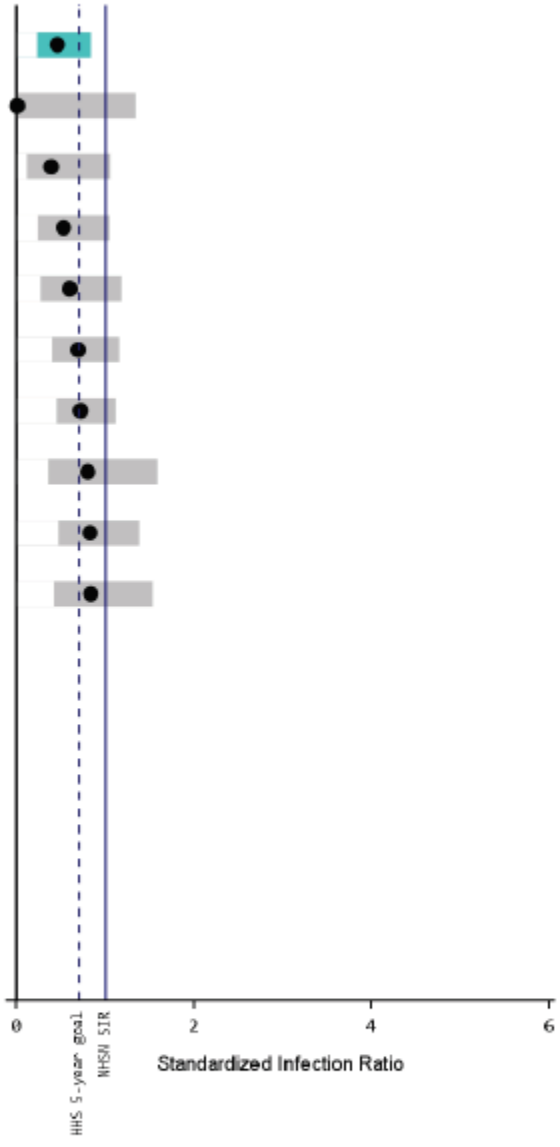


Data reported as of May 1, 2020 .
OBS = # infections observed
PRED = # infections statistically 'predicted' by national baseline
PD = # Patient days
SIR = Standardized infection ratio (OBS/PRED # of infections)
NC = SIR not calculated for hospitals with <1 predicted infection

MRSA in Acute Care Hospitals
Standardized Infection Ratios: January 1 – December 31, 2019
Hospital Group: Hospitals with 400 or More Beds

HOSPITAL	OBS	PRED	PD	SIR
Mission Hospital	9	20.0	220494	0.5
Central Regional Hospital	0	2.3	132432	0.0
Gaston Memorial Hospital	3	7.8	113298	0.4
Novant Health Presbyterian Medical	7	13.4	165702	0.5
Rex Healthcare	7	11.8	153389	0.6
New Hanover Regional Medical Center	13	18.9	187760	0.7
Novant Health Forsyth Medical Center	18	25.2	231689	0.7
Atrium Health Cabarrus	7	8.8	118223	0.8
WakeMed	13	15.8	184391	0.8
Cape Fear Valley Health System	9	10.8	172214	0.8

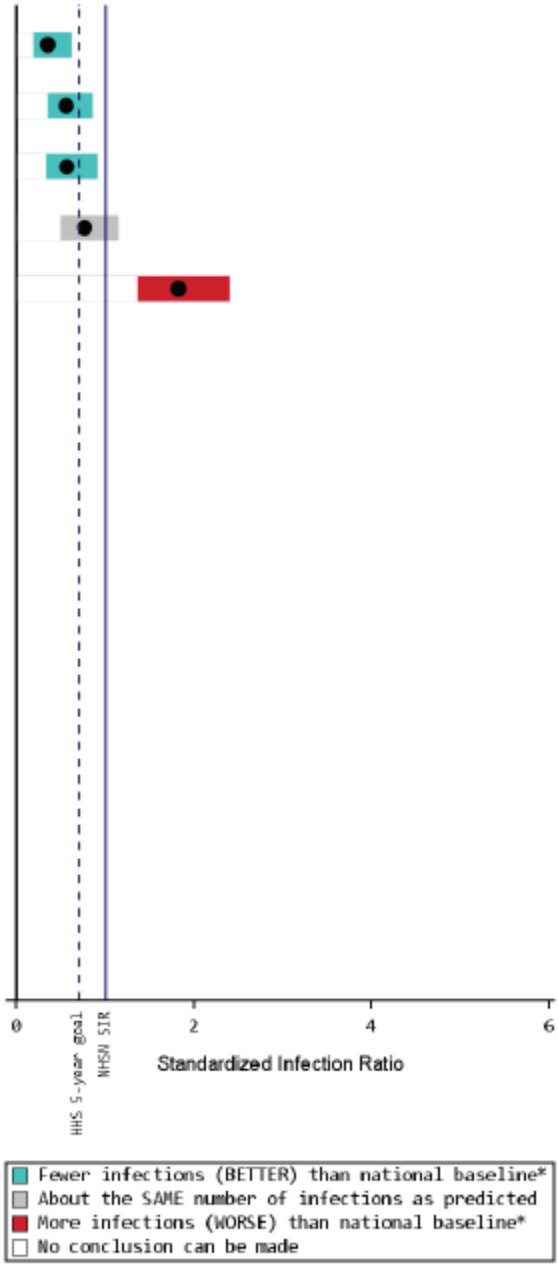
SIR AND 95% CONFIDENCE INTERVAL COMPARED TO 2015 NATIONAL BASELINE



Data reported as of May 1, 2020 .
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

MRSA in Acute Care Hospitals
Standardized Infection Ratios: January 1 – December 31, 2019
Hospital Group: Hospitals with Primary Medical School Affiliation

HOSPITAL	OBS	PRED	PD	SIR
UNC Health Care	10	29.1	266913	0.3
Duke University Hospital	19	34.4	315685	0.6
Carolinas Medical Center	15	26.7	309094	0.6
Vidant Medical Center	21	27.7	274220	0.8
Wake Forest University Baptist Medical	47	25.9	237561	1.8



Data reported as of May 1, 2020 .
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

Clostridioides difficile Laboratory-Identified Events (CDI LabID)

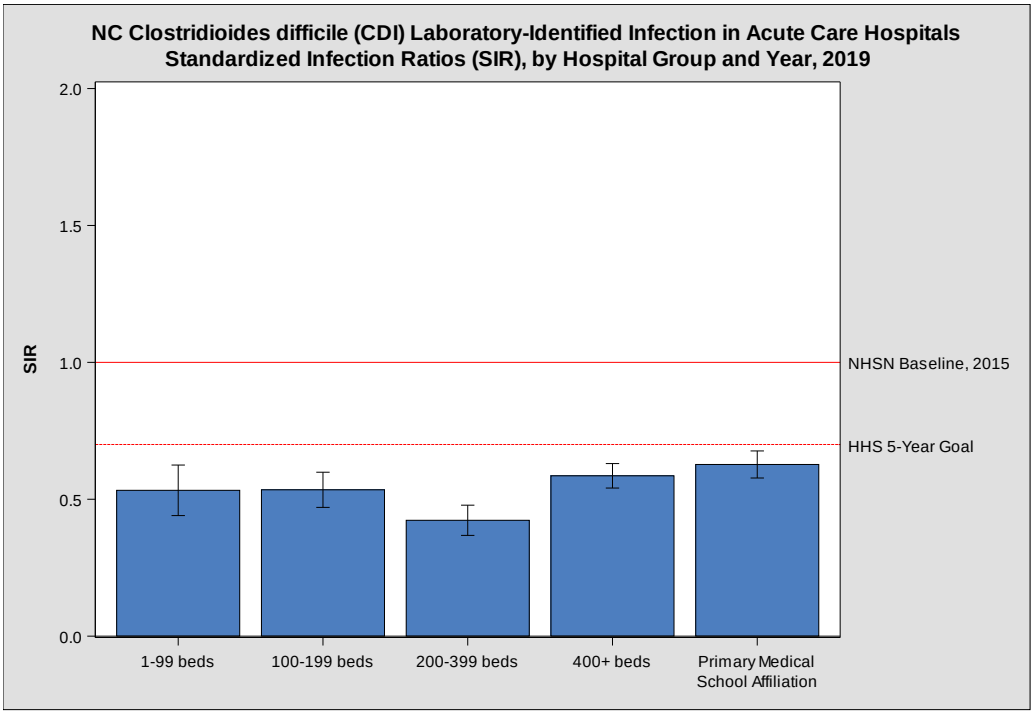
North Carolina 2019 CDI LabID Highlights

- In 2019, North Carolina hospitals reported 1898 CDI LabID events, compared to the 3385 CDI LabID events which were predicted. This was better than the 2015 national experience.
- The U.S. Department of Health and Human Services set a goal to reduce CDI nationally by 30% from the baseline experience by 2020; North Carolina has met this goal.

Table 7. NC Clostridioides difficile laboratory-identified events, 2019

Year	# Observed Infections	# Predicted Infections	How Does North Carolina Compare to the National Experience?
2019	1898	3384.49	★BETTER: Fewer infections than were predicted (better than the national experience)

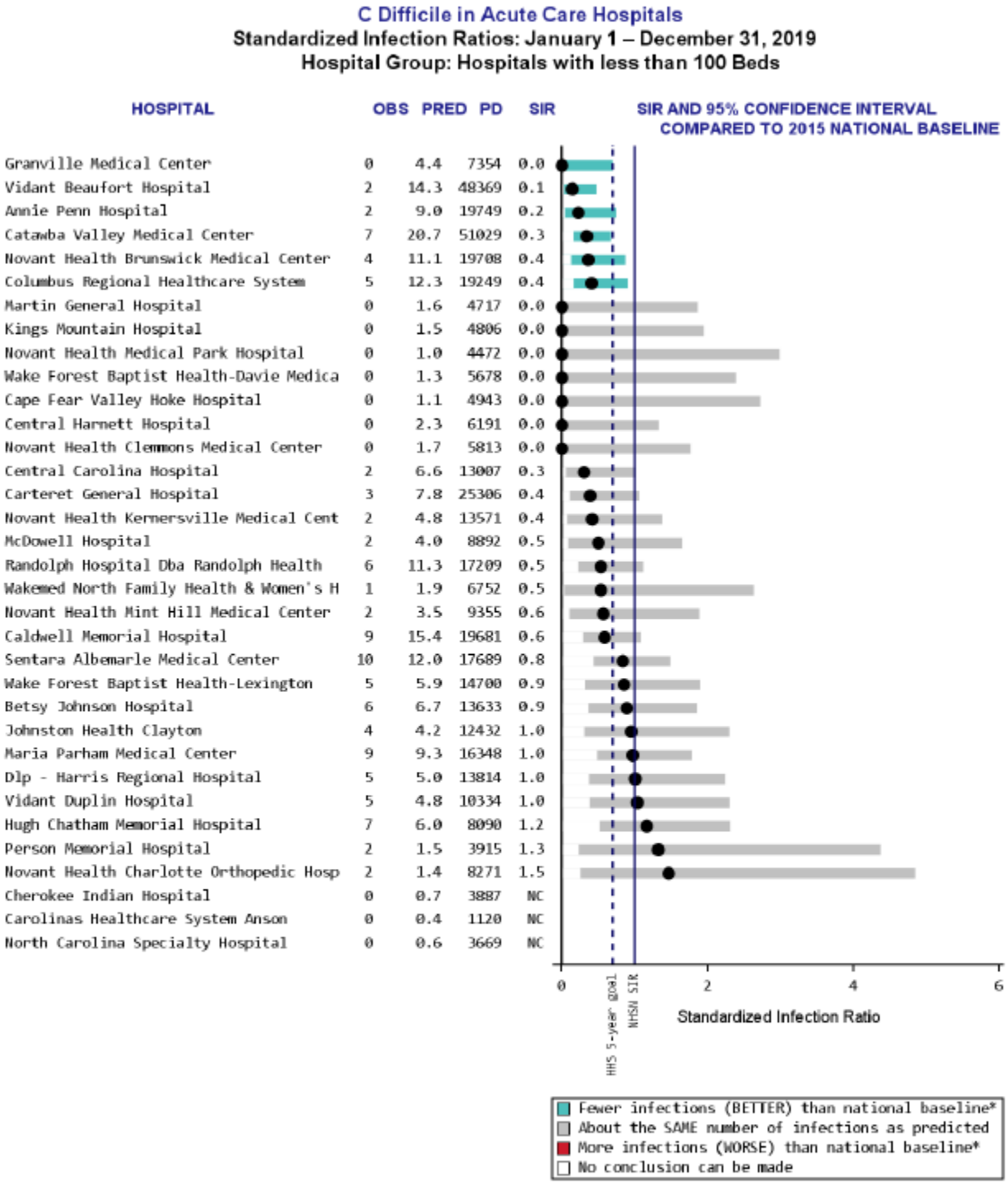
Figure 26.



Interpreting Figure 26:

- All hospital sized groups performed BETTER than the national experience, with fewer LabID CDI events than predicted
- All hospital sized groups met or the DHHS 5 Year goal for reduction of LabID CDI events by 30%

The following SIR plots summarize CDI labID data for North Carolina hospitals by hospital groups (Appendix E).

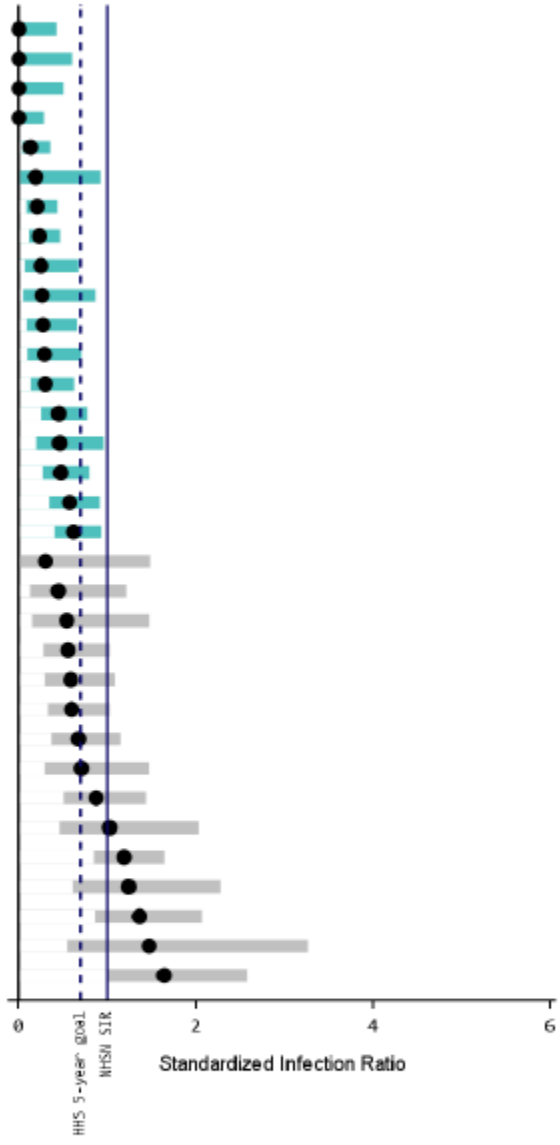


Data reported as of May 1, 2020 .
OBS = # infections observed
PRED = # infections statistically 'predicted' by national baseline
PD = # Patient days
SIR = Standardized infection ratio (OBS/PRED # of infections)
NC = SIR not calculated for hospitals with <1 predicted infection

C Difficile in Acute Care Hospitals
Standardized Infection Ratios: January 1 – December 31, 2019
Hospital Group: Hospitals with 100 to 199 Beds

HOSPITAL	OBS	PRED	PD	SIR
Vidant Roanoke Chowan Hospital	0	7.3	12488	0.0
Novant Health Thomasville Medical Cente	0	5.0	14836	0.0
Unc Rockingham Health	0	6.1	11997	0.0
Women's Hospital	0	10.8	29643	0.0
Novant Health Huntersville	3	23.2	33399	0.1
Davis Regional Medical Center	1	5.4	12890	0.2
Duke Raleigh Hospital	6	29.5	54799	0.2
Novant Health Matthews Medical Center	7	30.4	47102	0.2
Atrium Health Lincoln	3	12.1	19332	0.2
Atrium Health Stanly	2	7.7	12718	0.3
Scotland Memorial Hospital	4	14.7	23818	0.3
Atrium Health University City	4	13.9	25957	0.3
Atrium-Union	6	20.1	33143	0.3
WakeMed Cary Hospital	12	26.7	46291	0.4
Haywood Regional Medical Center	6	13.1	20262	0.5
Wesley Long Hospital	13	27.6	43733	0.5
Nash Health Care Systems	16	28.0	46007	0.6
Frye Regional Medical Center	21	34.0	33598	0.6
Advent Health Hendersonville	1	3.3	8793	0.3
Vidant Edgecombe Hospital	3	6.8	12756	0.4
Wake Forest Baptist Health Wilkes Medic	3	5.6	12736	0.5
Halifax Regional Medical Center	9	16.3	20154	0.6
Northern Regional Hospital	9	15.4	16717	0.6
Johnston Health	12	20.1	32838	0.6
Pardee Hospital	12	17.9	35413	0.7
Lake Norman Regional Medical Center	6	8.5	15719	0.7
Lenoir Memorial Hospital	14	16.1	25956	0.9
Rutherford Regional Medical Center	7	6.8	11750	1.0
Iredell Memorial Hospital	35	29.5	36491	1.2
Wilson Medical Center	9	7.3	28622	1.2
Onslow Memorial Hospital	20	14.7	28120	1.4
Sampson Regional Medical Center	5	3.4	10525	1.5
ARHS-Watauga Medical Center	17	10.4	15174	1.6

SIR AND 95% CONFIDENCE INTERVAL COMPARED TO 2015 NATIONAL BASELINE



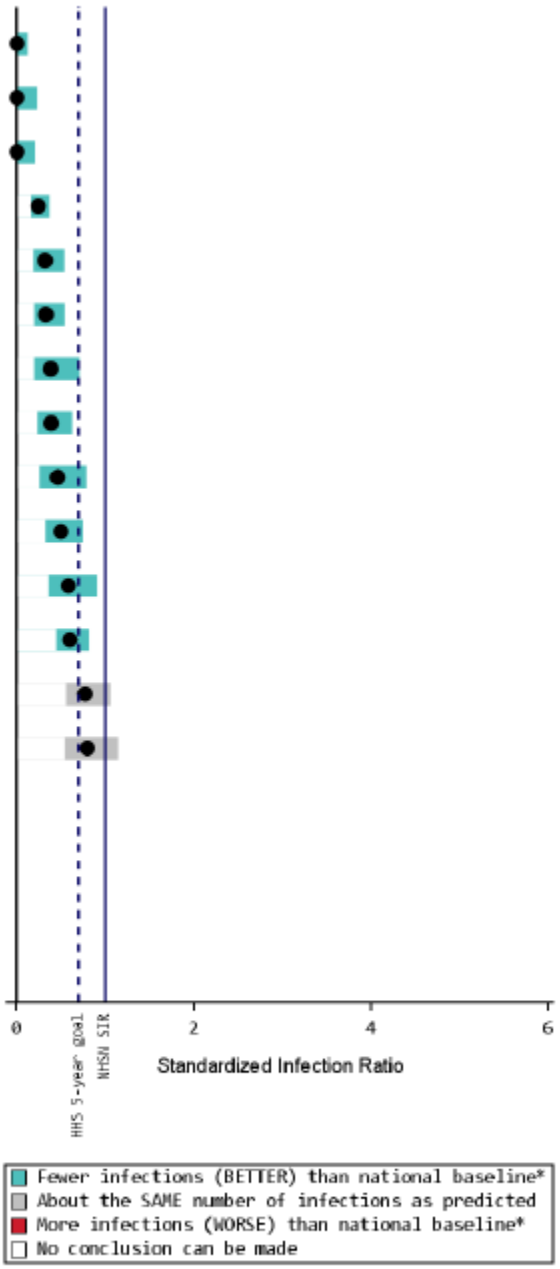
Fewer infections (BETTER) than national baseline*
About the SAME number of infections as predicted
More infections (WORSE) than national baseline*
No conclusion can be made

Data reported as of May 1, 2020 .
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

C Difficile in Acute Care Hospitals
Standardized Infection Ratios: January 1 – December 31, 2019
Hospital Group: Hospitals with 200 to 399 Beds

HOSPITAL	OBS	PRED	PD	SIR
Novant Health Rowan Medical Center	0	27.4	39457	0.0
Cherry Hospital	0	13.6	84948	0.0
Broughton Hospital	0	15.4	91788	0.0
Moses Cone Hospital	19	79.7	120933	0.2
CarolinaEast Medical Center	13	41.0	64519	0.3
Southeastern Regional Medical Center	14	43.1	54846	0.3
Carolinas Healthcare System Cleveland	9	23.7	43384	0.4
High Point Regional Health System	15	39.0	67873	0.4
Alamance Regional Medical Center	12	26.3	39743	0.5
Atrium-Pineville	22	44.6	68803	0.5
Atrium-Mercy	18	31.0	50142	0.6
FirstHealth Moore Regional Hospital	40	66.9	88786	0.6
Duke Regional Hospital	37	48.2	70330	0.8
Wayne Memorial Hospital	27	34.1	49526	0.8

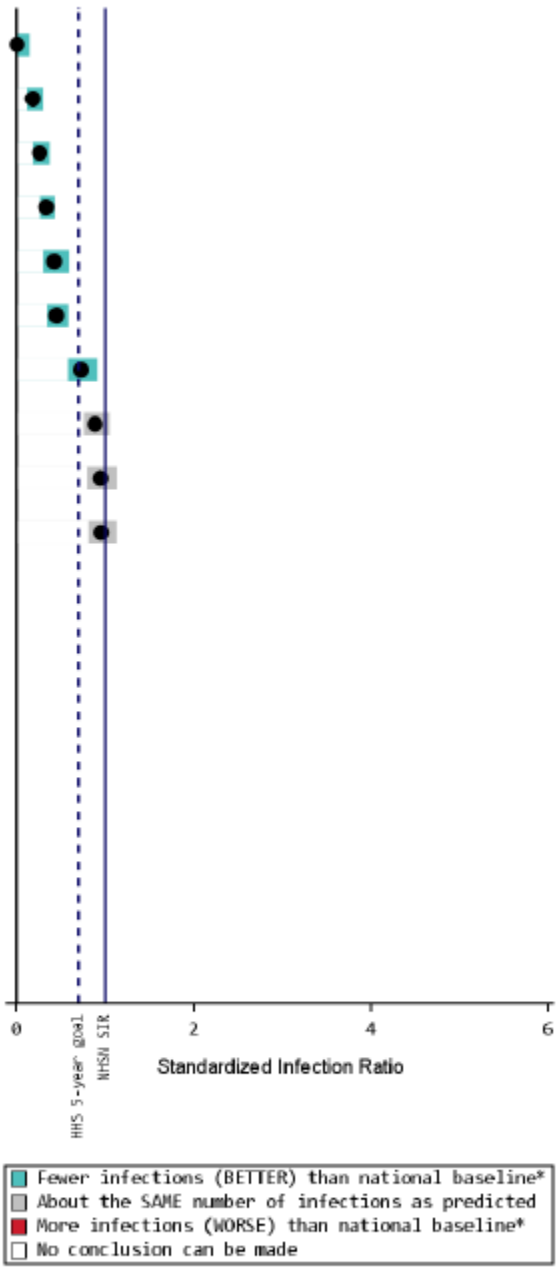
SIR AND 95% CONFIDENCE INTERVAL
COMPARED TO 2015 NATIONAL BASELINE



Data reported as of May 1, 2020 .
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

C Difficile in Acute Care Hospitals
Standardized Infection Ratios: January 1 – December 31, 2019
Hospital Group: Hospitals with 400 or More Beds

HOSPITAL	OBS	PRED	PD	SIR
Central Regional Hospital	0	22.9	132432	0.0
Gaston Memorial Hospital	14	79.1	108179	0.2
Novant Health Presbyterian Medical	26	102	134437	0.3
Novant Health Forsyth Medical Center	63	192	209022	0.3
Atrium Health Cabarrus	32	76.4	108174	0.4
WakeMed	54	121	161313	0.4
Cape Fear Valley Health System	73	101	152328	0.7
Mission Hospital	141	160	198535	0.9
Rex Healthcare	120	127	137484	0.9
New Hanover Regional Medical Center	137	144	178531	1.0



Data reported as of May 1, 2020 .
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

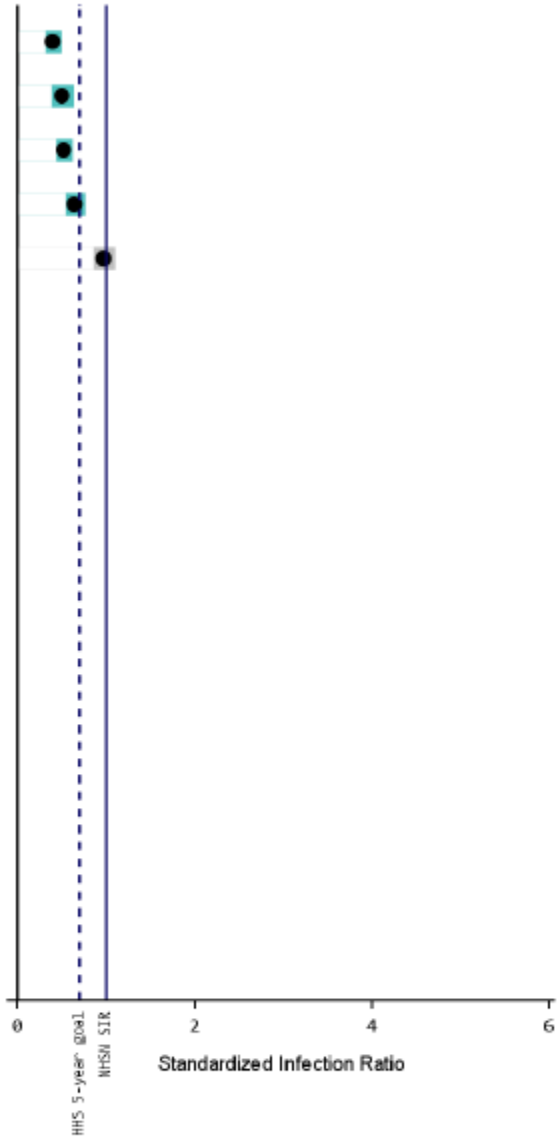
C Difficile in Acute Care Hospitals

Standardized Infection Ratios: January 1 – December 31, 2019

Hospital Group: Hospitals with Primary Medical School Affiliation

HOSPITAL	OBS	PRED	PD	SIR
Vidant Medical Center	75	193	248984	0.4
Wake Forest University Baptist Medical	60	122	219887	0.5
Carolinas Medical Center	109	213	268658	0.5
UNC Health Care	131	206	242019	0.6
Duke University Hospital	243	252	292395	1.0

SIR AND 95% CONFIDENCE INTERVAL
COMPARED TO 2015 NATIONAL BASELINE



Data reported as of May 1, 2020 .
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

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 your bladder or your kidney.

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, or drainage of fluid from the wound.

- **Methicillin-resistant *Staphylococcus aureus* (MRSA)** infections are caused by bacteria that are resistant to certain types of drugs. 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 by the facility.

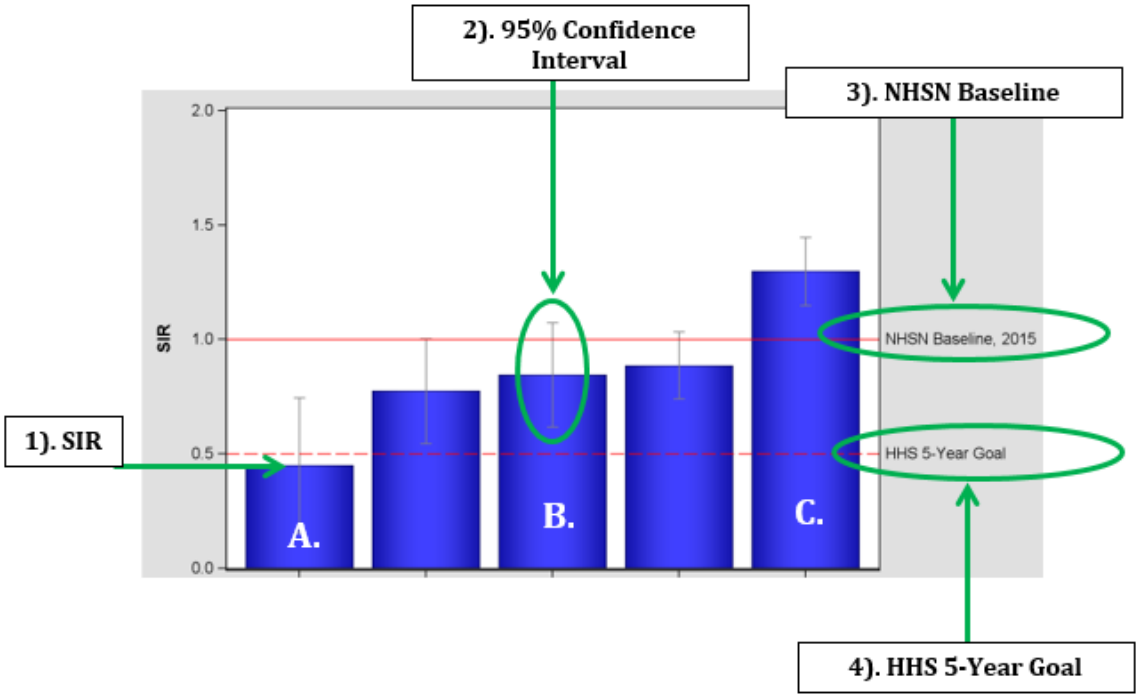
- **Predicted Infections (or Predicted Events):** This is a calculated value that reflects the number of infections (or events, for LabID measures) that we have "predicted" to occur in this facility, based on the national experience.

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

  ★ 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)
  No Conclusion: Indicates that North Carolina reported data, but there was not enough information to make a reliable comparison to the national experience (# of predicted infections was less than 1).

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.
- 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.

A) Represents an SIR value of 1
B) Represents an SIR value of less than 1
C) Represents an SIR value of greater than 1

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 we are 95% confident 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.
- 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.

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

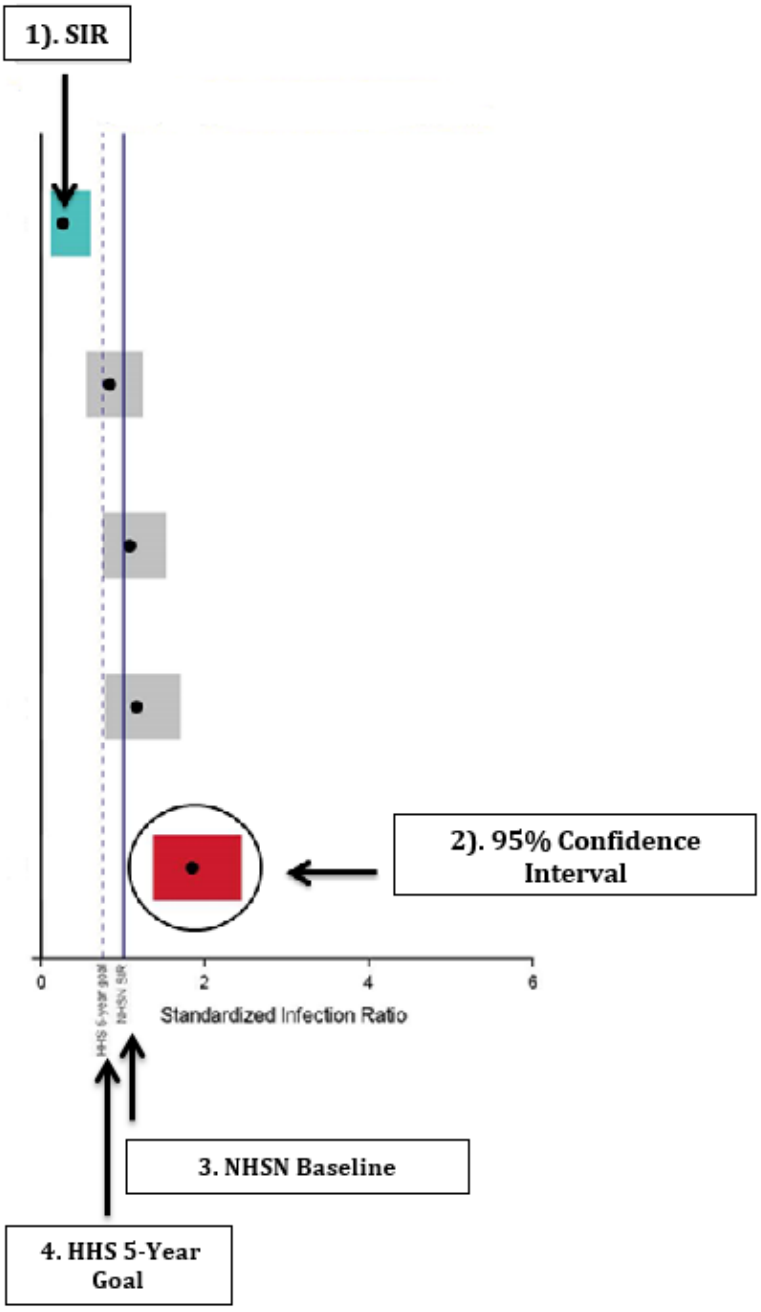
- The NHSN baseline is the number of predicted infections based on the national experience.
- The NHSN baseline year for all HAIs use data from 2015.

4). HHS 5-Year Goal – Represented by the dotted red line in each figure.

- Health and Human Services established a 5-year goal to reduce each HAI by a certain percentage.
- For CLABSI the 5-year goal is a 50% reduction from the 2015 baseline experience by 2020, so the 5-year goal SIR will be 0.75 (or 1.0-.25).
- The goal is considered met when the SIR estimate is at or below this dotted line and the upper confidence limit is also at or below this dotted line.
- If the SIR estimate is at or below this dotted line but the upper confidence limit crosses this dotted line, the number of infections does not differ from the 5-year goal .

5). 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.

4). HHS 5-Year Goal – Represented by the dotted line in each plot.

- Health and Human Services established a 5-year goal to reduce each HAI by a certain percentage from the 2015 baseline.
- If the upper confidence limit is below this dotted line, the facility has met the HHS 5-year goal.
- If the confidence interval crosses the dotted line, the number of infections at that facility does not differ from the 5-year goal.
- If the lower confidence limit is above this dotted line the facility has not met the 5-year goal.

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/or 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. *Graduate* – 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 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 and Medicaid Services
CLABSI	Central line-associated bloodstream infections
CRE	Carbapenem-resistant Enterobacteriaceae
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
NHLC	Nursing Home Licensure and Certification

APPENDIX B. Acronyms (continued)

NHSN	National Healthcare Safety Network
NICU	Neonatal intensive (critical) care unit
SIR	Standardized infection ratio
SSI	Surgical site infection
VRE	Vancomycin-resistant *Enterococcus*

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

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Appendix D. Healthcare Facility Groupings, 2019 National Healthcare Safety Network Annual Hospital Survey

Hospital Group	Hospital Name	Number of Beds
1-99 beds	FirstHealth Moore Regional Hospital - Hoke Campus	8
	Carolinas Healthcare System Anson	15
	Cherokee Indian Hospital	18
	North Carolina Specialty Hospital	18
	Novant Health Medical Park Hospital	22
	Cape Fear Valley Hoke Hospital	29
	Murphy Medical Center	32
	McDowell Hospital	34
	Novant Health Clemmons Medical Center	36
	Person Memorial Hospital	38
	WakeMed North Family Health & Women's Hospital	44
	Novant Health Charlotte Orthopedic Hospital	48
	Martin General Hospital	49
	Wake Forest Baptist Health-Davie Medical Center	50
	Johnston Health Clayton	50
	Novant Health Kernersville Medical Center	50
	Central Harnett Hospital	50
	Annie Penn Hospital	53
	Granville Medical Center	62
	Columbus Regional Healthcare System	70
	Carteret General Hospital	72
	Kings Mountain Hospital	72
	Novant Health Brunswick Medical Center	74
	FirstHealth Moore Regional Hospital - Richmond Campus	79
	Vidant Duplin Hospital	80
	Hugh Chatham Memorial Hospital	81
	Randolph Hospital DBA Randolph Health	85
	Caldwell Memorial Hospital	85
	Wake Forest Baptist Health-Lexington Medical Center	85
	DLP - Harris Regional Hospital	86
	Vidant Beaufort Hospital	88
	Halifax Regional Medical Center	90
	Novant Health Huntersville Medical Center	91
	Sentara Albemarle Medical Center	97
	Park Ridge Health	98
100-199 beds	Carolinas Medical Center- University	100
	Haywood Regional Medical Center	100
	Northern Hospital of Surry County	100
	Maria Parham Medical Center	101

	Carolinas HealthCare System Lincoln	101
	Betsy Johnson Hospital	101
	Scotland Memorial Hospital	104
	UNC Rockingham Health	108
	Stanly Regional Medical Center	109
	Vidant Roanoke Chowan Hospital	114
	Sampson Regional Medical Center	116
	Central Carolina Hospital	116
	ARHS-Watauga Medical Center	117
	Vidant Edgecombe Hospital	117
	Lake Norman Regional Medical Center	123
	Rutherford Regional Medical Center	125
	Wake Forest Baptist Health Wilkes Medical Center	130
100-199 beds cont.	Women's Hospital	134
	Pardee Hospital	138
	Carolinas Healthcare System Blue Ridge	139
	Davis Regional Medical Center	144
	Wilson Medical Center	145
	Novant Health Matthews Medical Center	146
	Novant Health Thomasville Medical Center	149
	Wesley Long Hospital	150
	Nash Health Care Systems	155
	Onslow Memorial Hospital	162
	Lenoir Memorial Hospital, Inc	167
	Frye Regional Medical Center	170
	Johnston Health	172
	Duke Raleigh Hospital	177
	WakeMed Cary Hospital	180
	Carolinas Medical Center - Union	182
	Catawba Valley Medical Center	190
	Iredell Memorial Hospital	199
200-399 beds	Carolinas Medical Center- Pineville	206
	Carolinas Medical Center- Mercy	213
	Duke Regional Hospital	214
	Alamance Regional Medical Center	238
	Carolinas Healthcare System Cleveland	241
	Wayne Memorial Hospital	242
	Cherry Hospital	243
	Southeastern Regional Medical Center	246
	Novant Health Rowan Medical Center	268
	Broughton Hospital	297
	High Point Regional Health System	300

	CarolinaEast Medical Center	350
	FirstHealth Moore Regional Hospital	376
400+ beds	Central Regional Hospital	405
	Gaston Memorial Hospital	435
	Moses Cone Hospital	443
	Carolinas Healthcare System - NorthEast	457
	Rex Healthcare	665
	Novant Health Presbyterian Medical Center	699
	New Hanover Regional Medical Center	711
	WakeMed	716
	Cape Fear Valley Health System	775
	Mission Hospital	791
	Novant Health Forsyth Medical Center	879
Primary Medical School Affiliation	Wake Forest University Baptist Medical Center	885
	Carolinas Medical Center	898
	Vidant Medical Center	909
	UNC Health Care	914
	Duke University Hospital	952