USING NHSN AR , SETUP, REPORTING , AND USES

Marc J. Meyer RPh, BPharm, FAPIC, CIC

WHY?

- JC R3 Report July 2022
- **Use of leading practices in US hospital antimicrobial stewardship programs October 2022**
- The 2023 IPPS rule expands the list of required public health measures under the CMS Promoting Interoperability Program to include antimicrobial use and resistance (AUR) surveillance.
- Beginning in 2024, hospitals must report AUR data to CDC's National Healthcare Safety Network (NHSN) to earn full credit under the Public Health Objective.
- Its better for resistance and patients

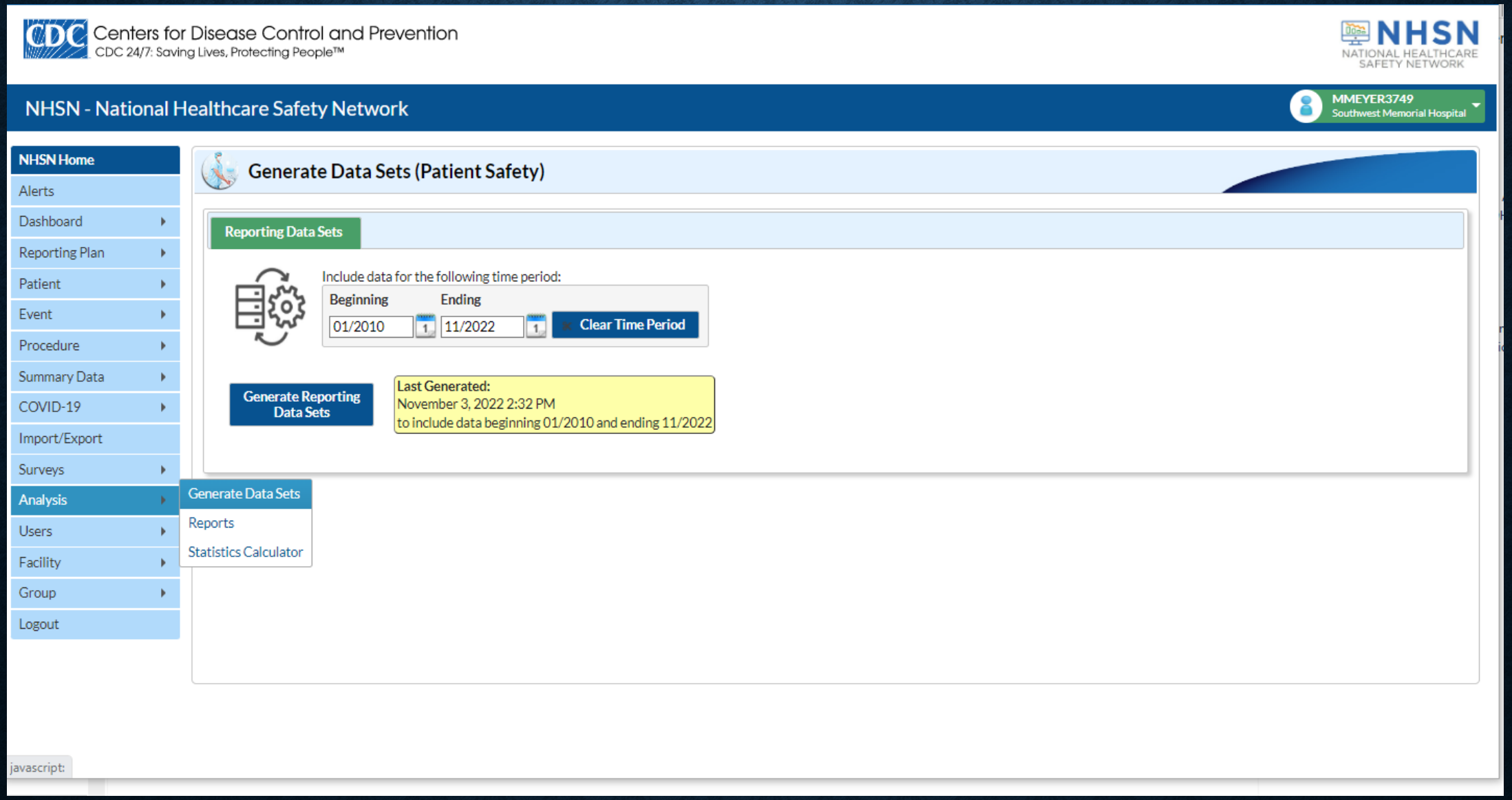
VENDOR

- Select your Vendor
  - Asolva $ They have worked with NHSN since 2015, CAH and small hospitals are there bread and butter.
  - Sentri7 $$$ $2400 a month for Clinical Pharmacy, Dose Me RX, Infection Prevention

ANTIMICROBIAL RESISTANCE (AR) VALIDATION

- https://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/aur/ar-validation-508.pdf
- You will work with your vendor to make sure your NHSN location map is correct in NHSN and it's the same on the vendor site.
- Your vendor will send data to NHSN AR.
- You will generate data sets (I will show in next slide)
- Make sure your are getting data for all the mapped areas the vendor is sending data

I HAVE DATA IN, NOW WHAT?



ANTIMICROBIAL RESISTANCE (AR) VALIDATION

- Confirm: Review 20 AR Events to ensure the specimen collection date is correct. For example, if the event was reported from an inpatient location the specimen collection date should be on or after the admission date. Per the AR Option protocol, specimens collected in the outpatient location types Emergency Department & 24-hour Observation Area should use the exact same date for both specimen collection date and admission date.
- Confirm: Review 30-50 AR Events to confirm the final interpretation reflects the consolidated results of the specific tests (E-test, MIC, and Disk Diffusion [Zone test]) interpretations. For example, as shown in the below screenshot, if the final interpretation is reported as "R", at least one specific test (E-test, MIC, and Disk Diffusion [Zone test]) result should be also reported as "R".

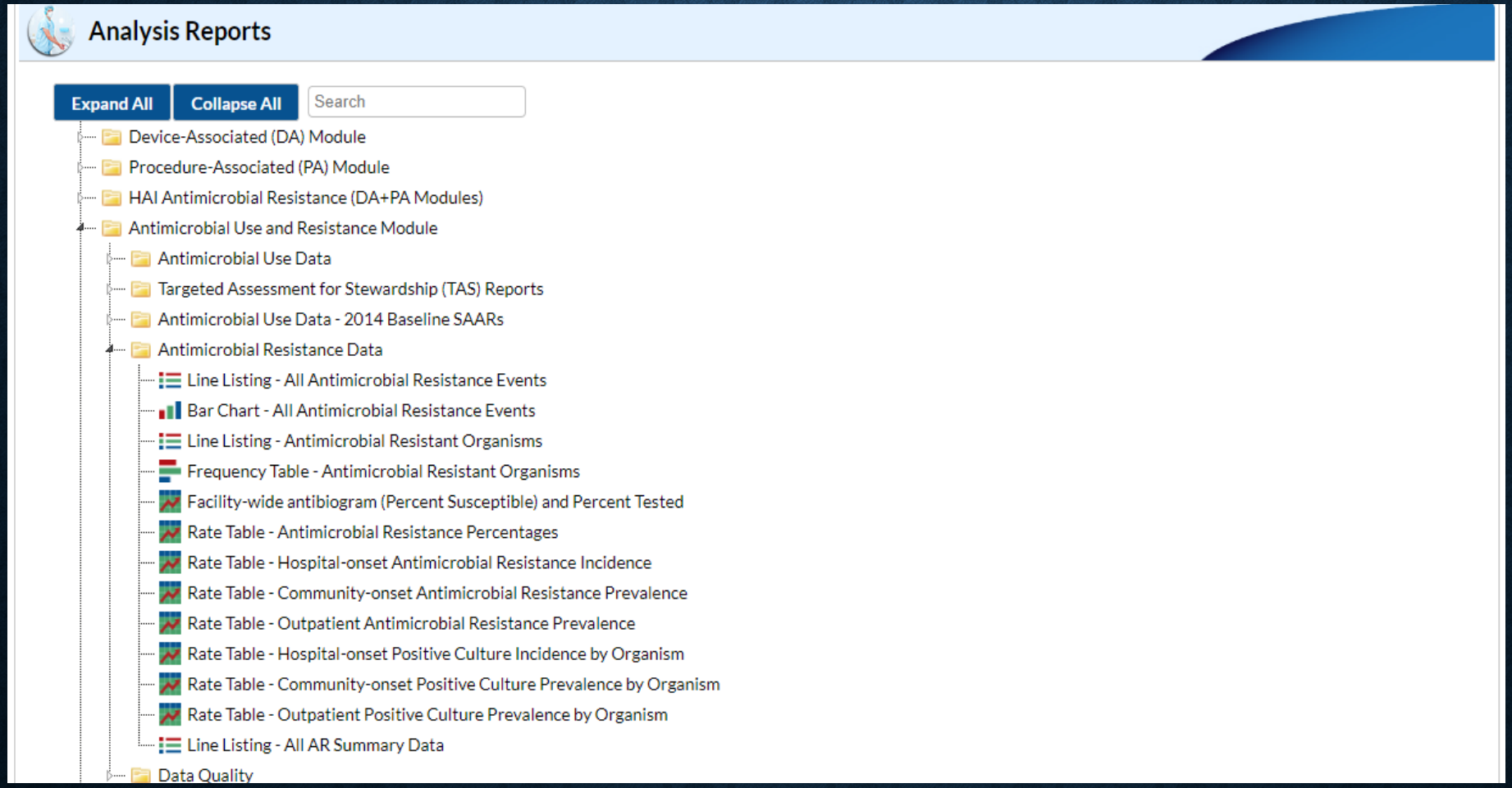
ANTIMICROBIAL RESISTANCE (AR) VALIDATION

- Confirm: Review 10 AR Events with specimens: • Collected during the last 7 days of the month or • With target organisms identified where subsequent susceptibility testing may have been performed Confirm any subsequent susceptibility testing completed by the lab is included in the NHSN AR Event results.
- Confirm: Review the Antimicrobial Resistant Organisms Line List to confirm MDROs at your facility are being submitted to NHSN.
- . Confirm: Once AR Events have been submitted for at least three months, review trends over time for specific organisms: Escherichia coli, Klebsiella pneumoniae, Staphylococcus aureus, and Enterobacter spp. Discuss any unexpected AR Event numbers with the vendor being used to submit AR Option data to NHSN.

ANTIMICROBIAL RESISTANCE (AR) VALIDATION

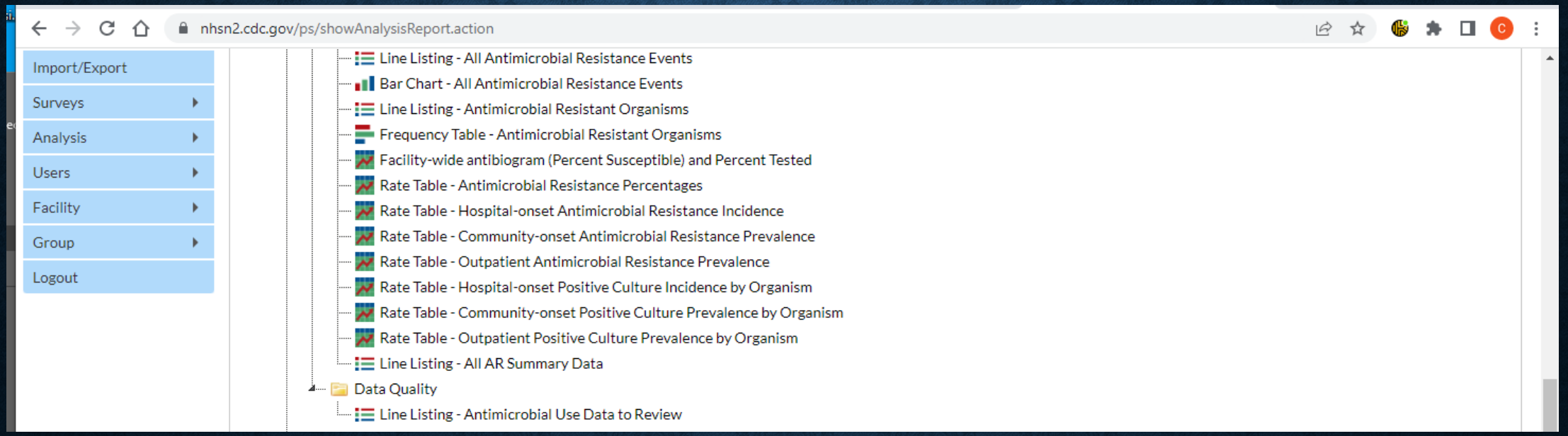
- Compare you antibiogram to the resistance antibiogram in NHSN
- They will be different but make sure hospital antibiogram shows the same resistance as the AR antibiogram.
- If different make sure your reporting lab is using the most current FDA or CLSI version for the M39 document.
- FDA can be different from the CLSI.

REPORTS IN NHSN AR



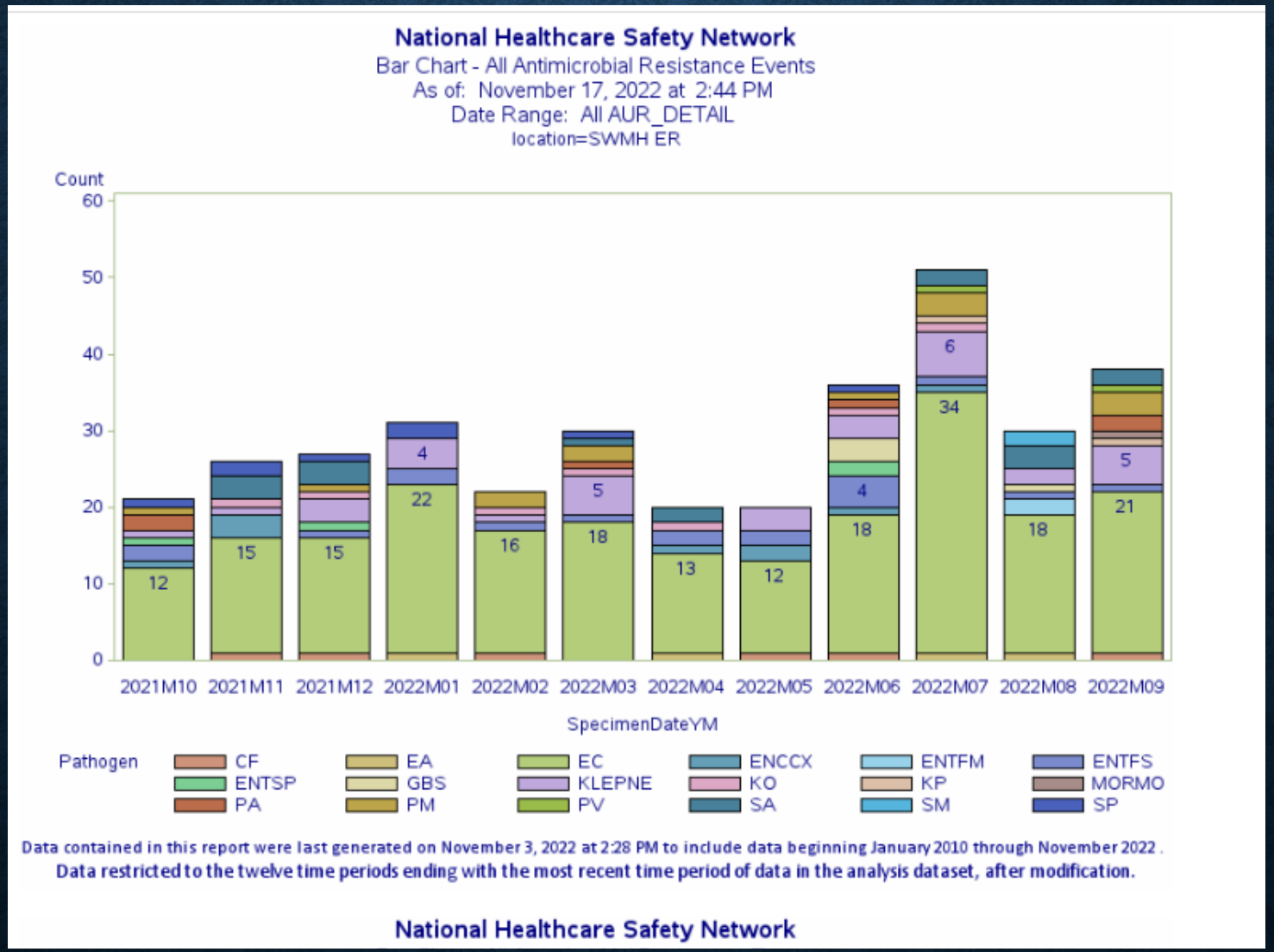
REPORTS IN NHSN AR

ANTIBIOGRAM

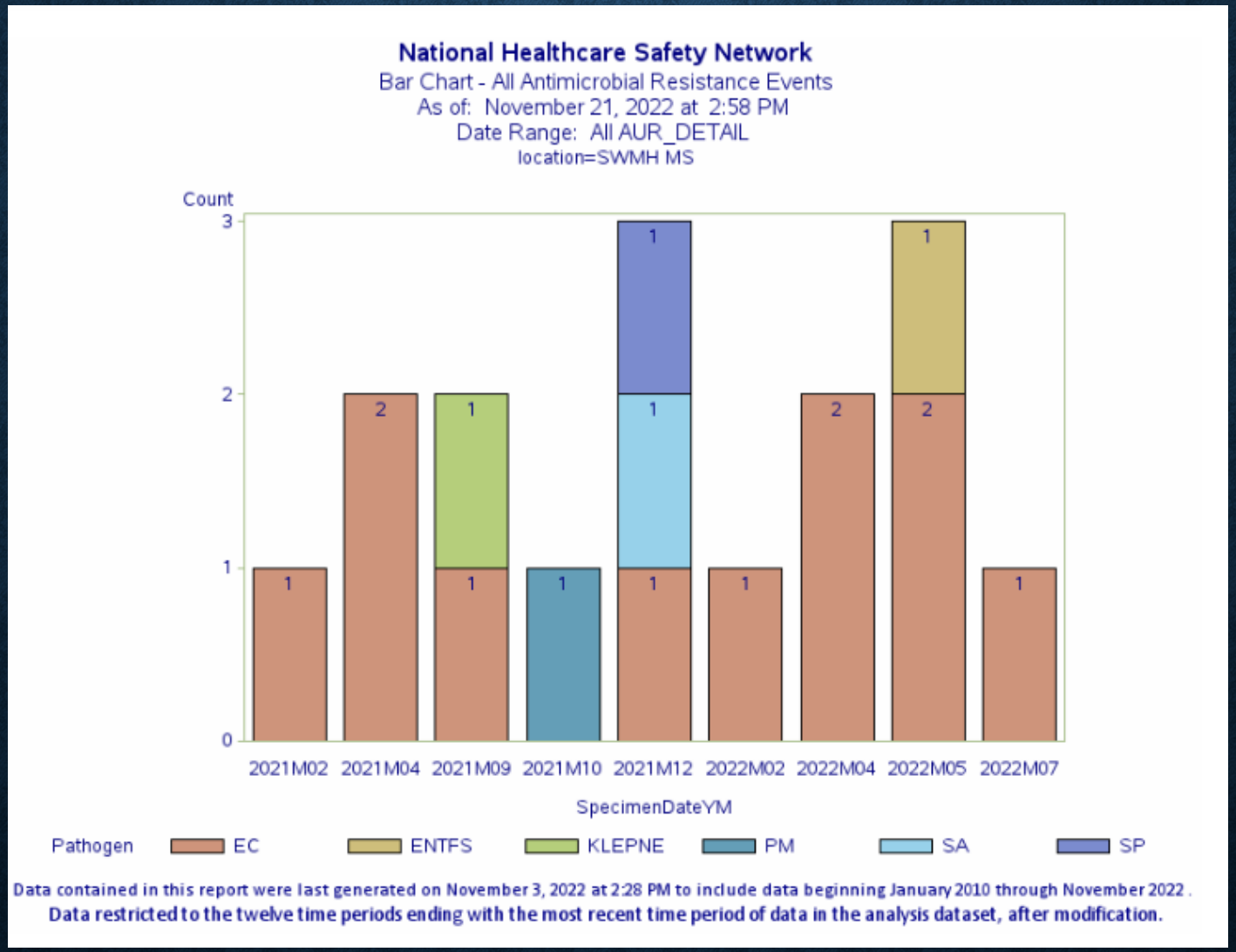


REPORTS IN NHSN AR: BAR

(APPENDIX I. NHSN AR OPTION PHÉNOTYPE DÉFINITIONS)



REPORTS IN NHSN AR: BAR



REPORTS IN NHSN AR: FREQUENCY TABLE

nhsn2.cdc.gov/ps/runRequestAnalysisReport.action

National Healthcare Safety Network
Frequency Table - Antimicrobial Resistant Organisms
As of: November 21, 2022 at 3:00 PM
Date Range: All ANTIBIOGRAM_AR

If (((phenotype_AR IN ("MRSA_AR", "ESCecoli_AR", "ESCklebsiella_AR", "carbNS_Acine_AR", "carbNS_PA_AR", "MDR_Acine_AR", "MDR_PA_AR", "VREfaecium_AR", "VREfaecalis_AR", "CREexpanded_AR", "FR_Candi_AR", "DR_SP_AR"))))

Frequency

Table of phenotype_AR by specDateYM

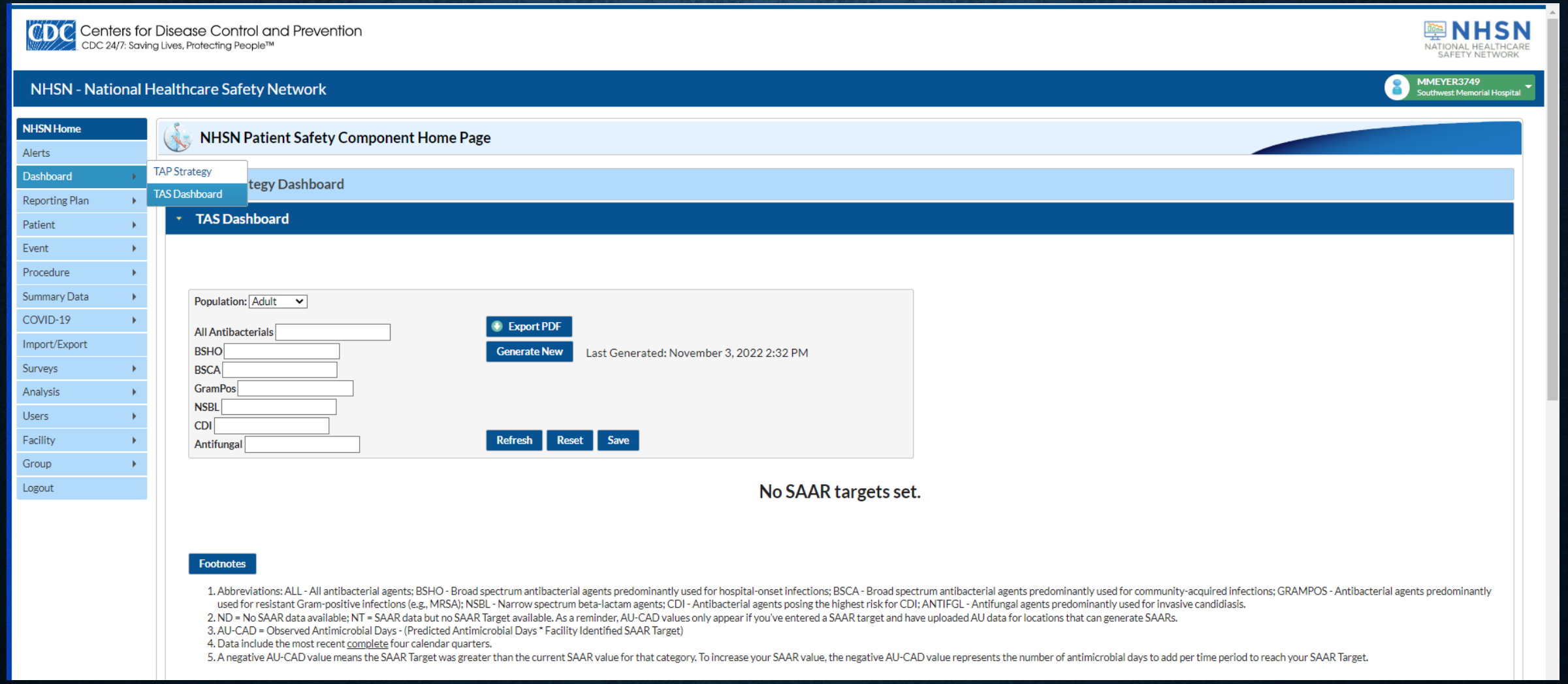
	specDateYM													
phenotype_AR	2021M02	2021M05	2021M07	2021M08	2021M11	2021M12	2022M02	2022M03	2022M04	2022M06	2022M07	2022M08	2022M09	Total
DR_SP_AR	0	1	1	0	0	0	0	1	0	1	0	0	0	4
ESCecoli_AR	0	0	1	1	0	1	1	1	3	0	1	0	0	9
ESCklebsiella_AR	0	0	0	0	0	0	0	0	0	0	2	0	2	4
MDR_PA_AR	0	1	0	0	0	0	0	0	0	0	0	0	0	1
MRSA_AR	1	0	0	0	1	1	0	0	1	0	0	0	0	4
VREfaecium_AR	0	0	0	0	0	0	0	0	0	0	0	2	0	2
Total	1	2	2	1	1	2	1	2	4	1	3	2	2	24

1. Please find the document containing Phenotype_AR definitions at https://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/aur/ar-phenotype-definitions-508.pdf

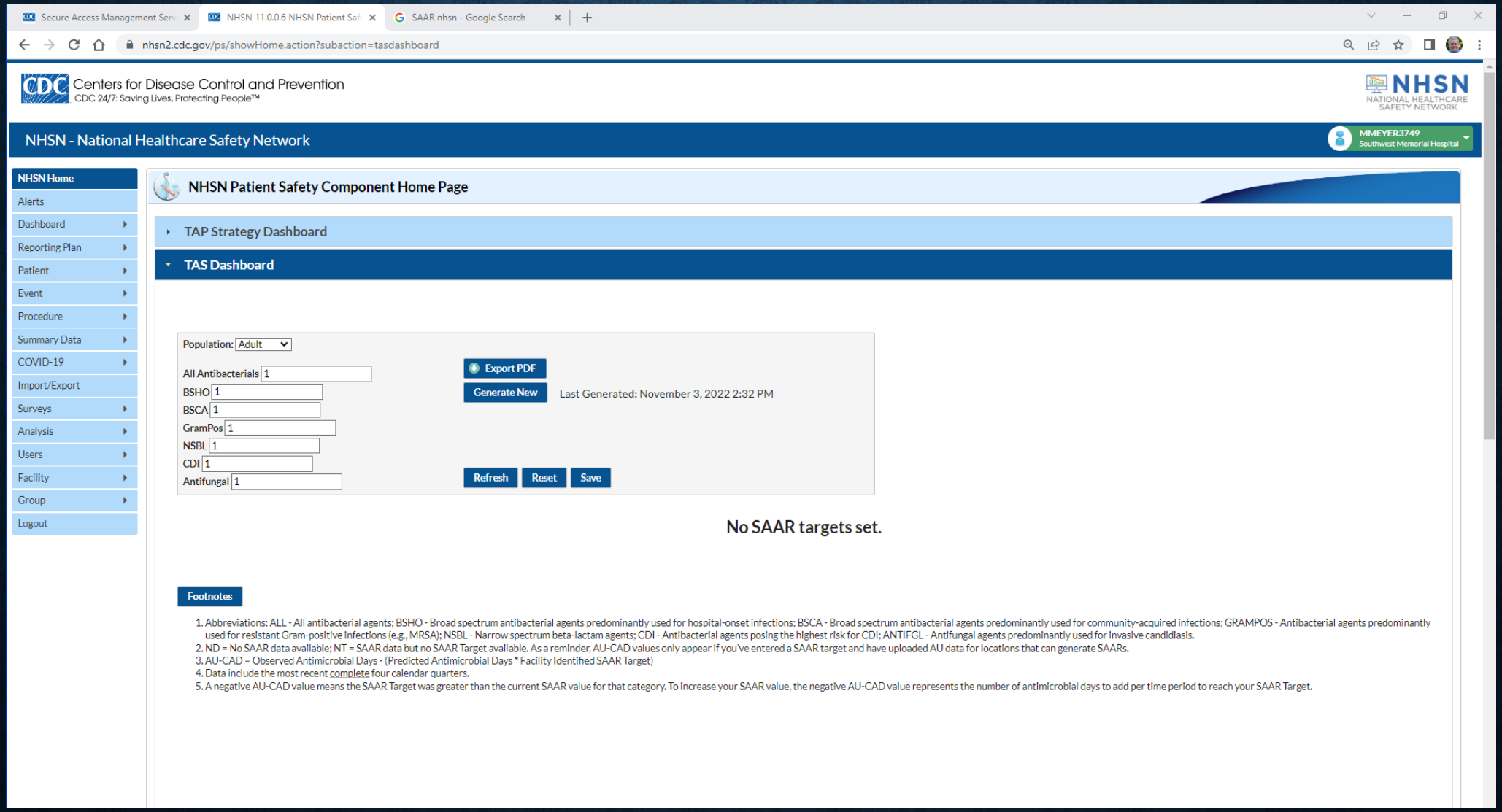
Data contained in this report were last generated on November 3, 2022 at 2:28 PM to include data beginning January 2010 through November 2022 .

MY FAVORITE REPORT AU

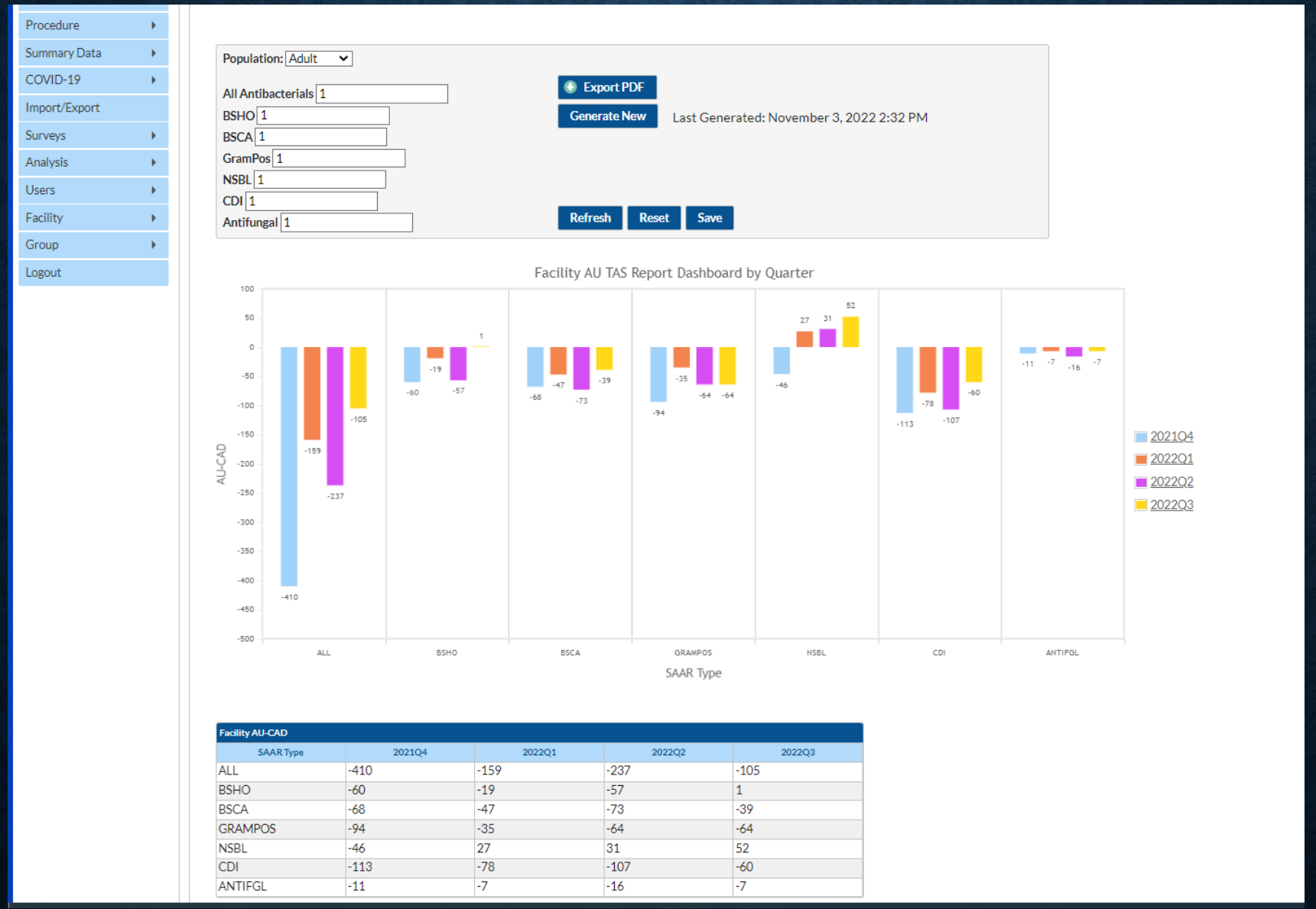
TAS (TARGETED ASSESSMENT FOR STEWARDSHIP)



MY FAVORITE REPORT AU



MY FAVORITE REPORT?



Facility AU-CAD

SAAR Type	2021Q4	2022Q1	2022Q2	2022Q3
ALL	-410	-159	-237	-105
BSHO	-60	-19	-57	1
BSCA	-68	-47	-73	-39
GRAMPOS	-94	-35	-64	-64
NSBL	-46	27	31	52
CDI	-113	-78	-107	-60
ANTIFGL	-11	-7	-16	-7

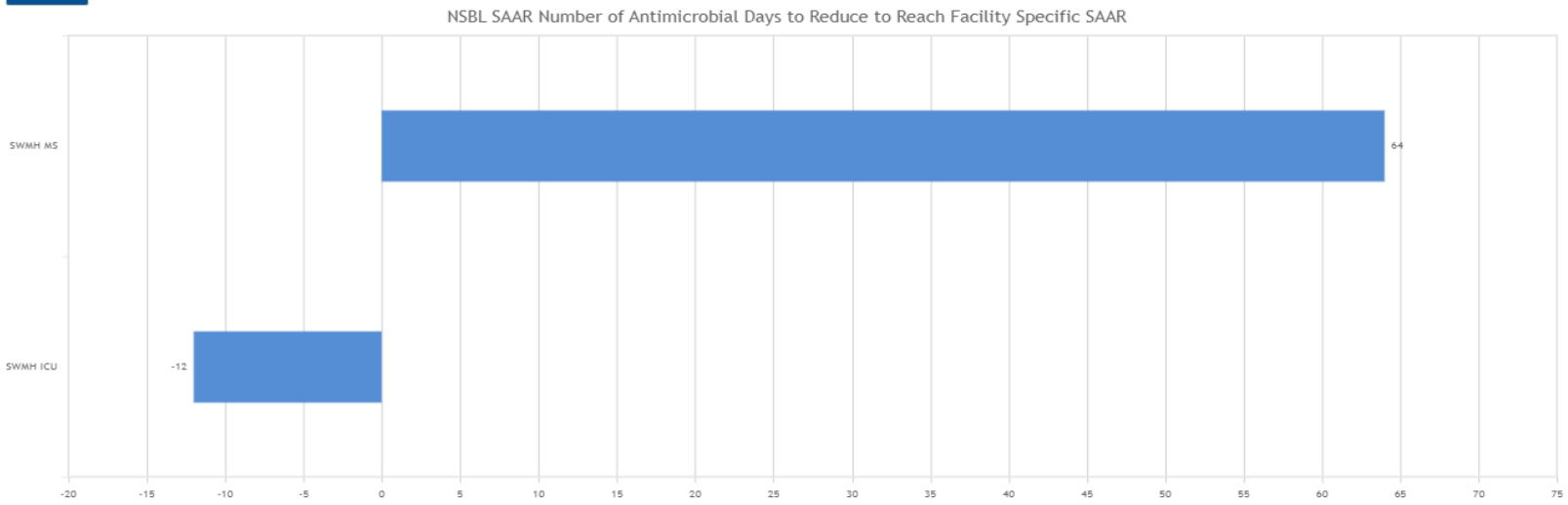
THEN THE ANTIMICROBIALS IN THE BOXES

nhsn2.cdc.gov/ps/showHome.action?subaction=tasdashboard

Group

Logout

Back



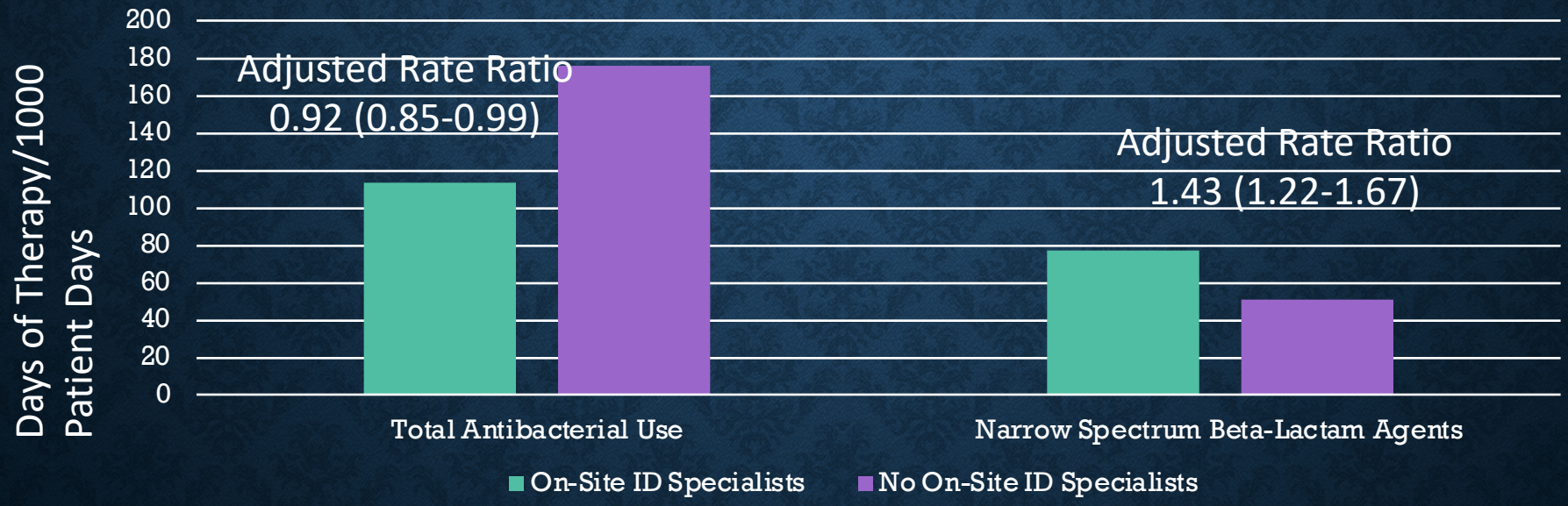
SAAR Type	Summary Year/Quarter	Location Rank	Location	Location Code	AU Days Predicted	Observed Antimicrobial Days	Location AU-CAD	Three highest use drugs within SAAR Type
NSBL	2022Q3	1	SWMH MS	IN:ACUTE:WARD:MS	67.702	132	64	CEFAZ(42); AMPIWS(27); CEFAD(14);
		2	SWMH ICU	IN:ACUTE:CC:MS	16.017	4	-12	AMPIWS(75); AMP(25); AMOX(0);

Cefazolin, Amp/sub, cefadroxil, ampicillin, amoxicillin

Footnotes

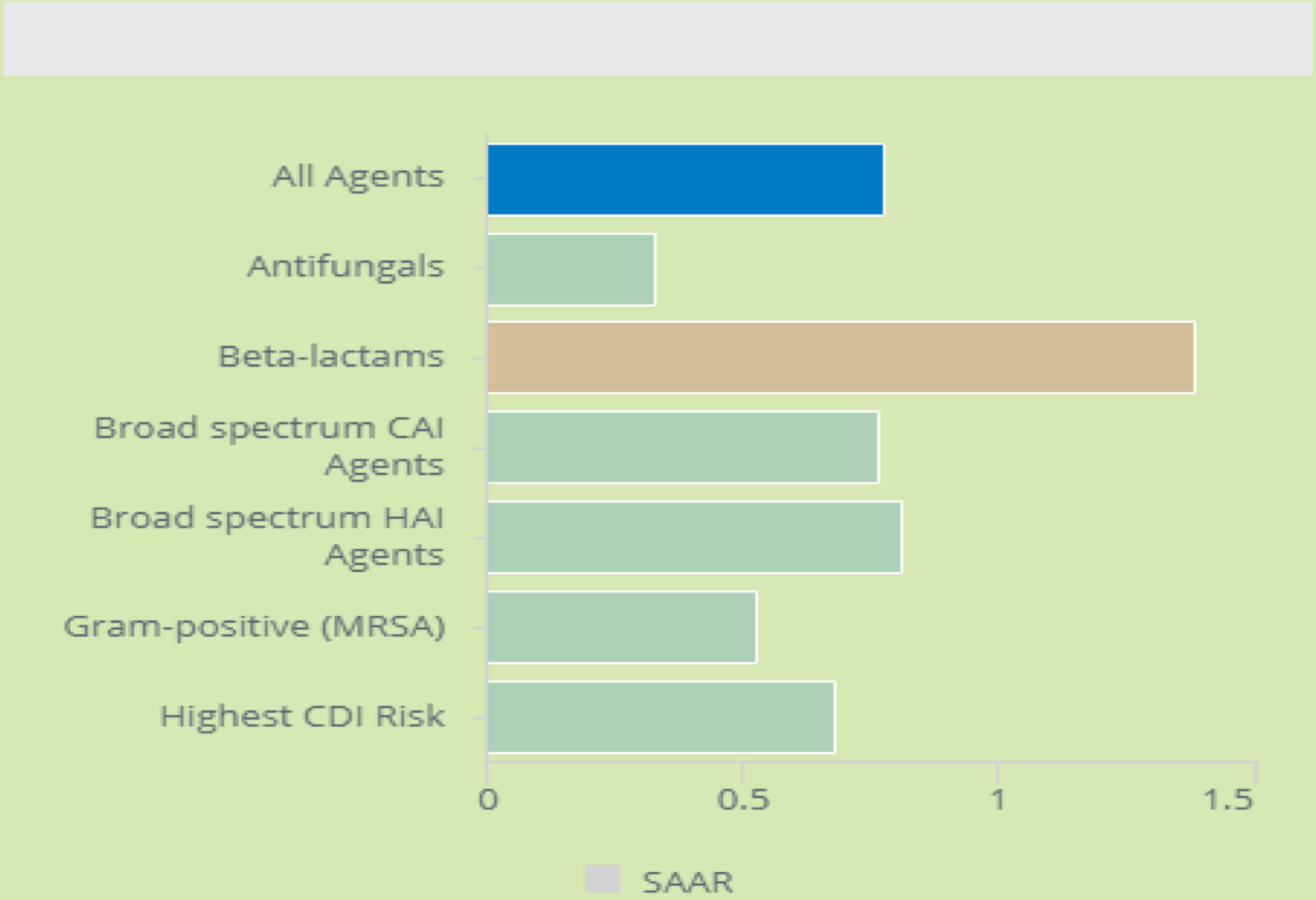
1. Abbreviations: ALL - All antibacterial agents; BSHO - Broad spectrum antibacterial agents predominantly used for hospital-onset infections; BSCA - Broad spectrum antibacterial agents predominantly used for community-acquired infections; GRAMPOS - Antibacterial agents predominantly used for resistant Gram-positive infections (e.g., MRSA); NSBL - Narrow spectrum beta-lactam agents; CDI - Antibacterial agents posing the highest risk for CDI; ANTIFGL - Antifungal agents predominantly used for invasive candidiasis.
2. As a reminder, AU-CAD values only appear if you've entered a SAAR target and have uploaded AU data for locations that can generate SAARs.
3. AU-CAD = Observed Antimicrobial Days - (Predicted Antimicrobial Days * Facility Identified SAAR Target)
4. If SAAR Type-level AU-CADs are the same in a given facility, their ranks are tied.
5. A negative AU-CAD value means the SAAR Target was greater than the current SAAR value for that category. To increase your SAAR value, the negative AU-CAD value represents the number of antimicrobial days to add per time period to reach your SAAR Target.
6. The drug code and full drug name can be found here: http://www.cdc.gov/nhsn/xls/aur/aur-eligible-antimicrobial-agents.xlsx

PRESENCE OF ON-SITE ID-SPECIALISTS ASSOCIATED WITH LOWER TOTAL INPATIENT ANTIMICROBIAL USE



Livorsi DJ et al. Clin Infect Dis 2021; 72(10): 1810-7.

SAAR


All Agents
Antifungals
Beta-lactams
Broad spectrum CAI Agents
Broad spectrum HAI Agents
Gram-positive (MRSA)
Highest CDI Risk
0
0.5
1
1.5
SAAR

DATA DEMONSTRATE PHARMACIST-LED INTERVENTIONS REDUCE UNNECESSARY ANTIMICROBIAL USE AND IMPROVE PATIENT OUTCOMES

Antimicrobial management team, led by an ID pharmacist with ID physician support compared to ID Fellows:

- Appropriate antibiotic choice: 87% vs 47%
- Cure rate: 64% vs 42%
- Median cost of hospital stay: $6,468 vs $7,864
- Median cost of antibiotics: $79 versus $122

Gross R, et al. *Clin Infect Dis*. 2001;33(3):289-295. Du Y et al. *Front Pharmacol*. 2020; 11: 442. Cantudo-Cuenca MR et al. *Scientific Reports* 2022; 12: 9501. Kooda K et al. *Ann Emerg Med.* 2022; 79(4): 374-387.

REFERENCES TO HELP

General info NHSN

- https://www.cdc.gov/nhsn/pdfs/validation/2022/pcsmanual_2022_508.pdf

AR Info

- https://www.cdc.gov/nhsn/pdfs/pscmanual/11pscaurcurrent.pdf

Papers

https://pubmed.ncbi.nlm.nih.gov/36226839/

https://www.jointcommission.org/-/media/tjc/documents/standards/r3-reports/r3_antibioticstewardship_july2022_final.pdf

- Marc J Meyer mmeyer@swhealth.org 970-564-2194 Office