Sparrow

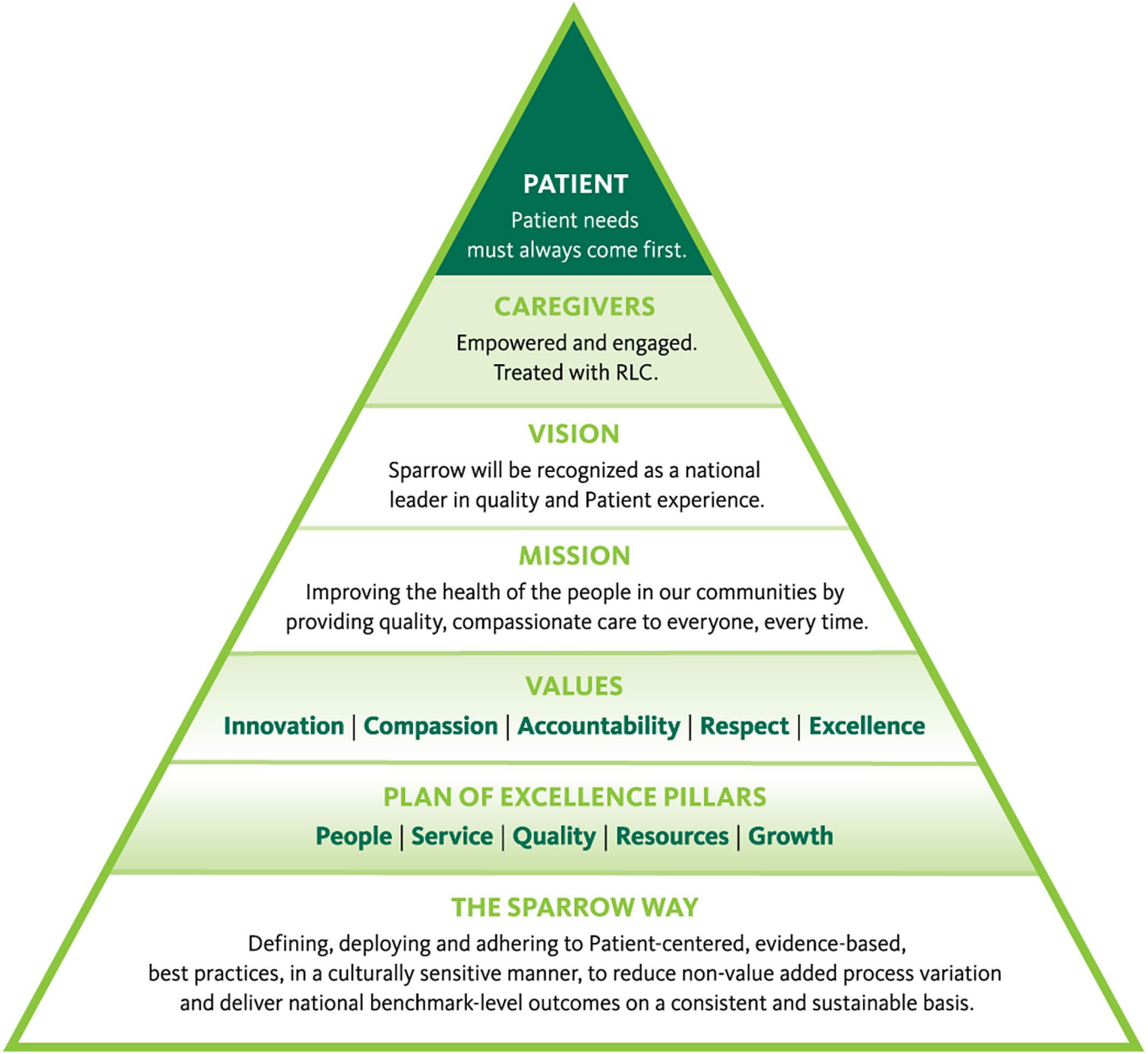
Sparrow Clinton Hospital

Antibiotic Stewardship
Sparrow Clinton Hospital

Justin Keeler, Pharm.D.

February 17, 2023

PATIENT
CAREGIVER
VISION
MISSION
VALUES
PILLARS OF EXCELLENCE
THE SPARROW WAY


PATIENT
Patient needs must always come first.
CAREGIVERS
Empowered and engaged. Treated with RLC.
VISION
Sparrow will be recognized as a national leader in quality and Patient experience.
MISSION
Improving the health of the people in our communities by providing quality, compassionate care to everyone, every time.
VALUES
Innovation | Compassion | Accountability | Respect | Excellence
PLAN OF EXCELLENCE PILLARS
People | Service | Quality | Resources | Growth
THE SPARROW WAY
Defining, deploying and adhering to Patient-centered, evidence-based, best practices, in a culturally sensitive manner, to reduce non-value added process variation and deliver national benchmark-level outcomes on a consistent and sustainable basis.

SCH Antimicrobial Stewardship: Intervention Strategies

- Restricted antibiotics list
  - Requires authorization by Infectious Disease or Clinical Pharmacist
- Best Practice Advisory alerts during order entry
  - Fluoroquinolones for acute bronchitis, acute sinusitis, uncomplicated UTI
- Diagnosis required on inpatient antibiotic orders in Epic.
- 5-day default duration for azithromycin orders.
- IV-to-PO protocol

SCH Antimicrobial Stewardship: Pharmacist Assessments

- Pharmacists assess and track antibiotic orders and make recommendations.
- Pharmacist I-Vents in Epic
  - At least daily and upon new orders
  - Epic SmartPhrases
    - Customized to be used for antimicrobial stewardship and pharmacokinetic dosing
    - Pulls in labs, vitals, admission date, code sepsis events, etc. Work in tandem with Summary reports to show larger results.
    - Special work-ups specific to:
      - CAP (risks for MRSA and *Pseudomonas*)
      - SSTI (IDSA grading for purulence and severity)
      - UTI (screening for asymptomatic bacteriuria)

SCH Antimicrobial Stewardship: Pharmacist Policies & Procedures

- Pharmacist-driven nasal MRSA policy
- Pharmacist-driven procalcitonin policy
- Pharmacy use of a 72-hour time-out period
- Standardized order sets, panels, and Pathways
  - Sepsis by source of infection
  - Infectious indications (Pneumonia, Cellulitis, COPD, Intra-Abdominal, UTI, Peri-Ops)
  - *Clostridioides difficile* Treatment order panel
- Code Sepsis antibiotic selection guide
- Code Sepsis rapid infusion of first dose guide
- Verigene Gram-Positive Blood Culture

Hospital Publications

- Annual antibiogram published
- Pocket Guide: Empiric Treatment of Common Infections in Adults
- Beta-Lactam Antibiotic Allergy chart was made policy and available on PPM to assess allergy-antibiotic combinations.

Antibiotic Tracking and Reporting

- Four quarterly Medication Use Evaluations
  - Q1: Urinary tract infections
  - Q2: Skin & skin structure infections
  - Q3: Emergency Dept
  - Q4: Lower respiratory tract infections

Interdisciplinary Rounds

- Mid-AM on Mon-Fri
- Prompts discussion between caregivers who have multiple perspectives and responsibilities
- Catalyst for:
  - Ideas
  - Suggestions
  - Q&A
  - Sharing of concerns

SCH Antimicrobial Stewardship

- SCH Antimicrobial Stewardship committee meets quarterly
- Quarterly Sepsis Committee meets to address 3-hour bundle gaps

Reporting

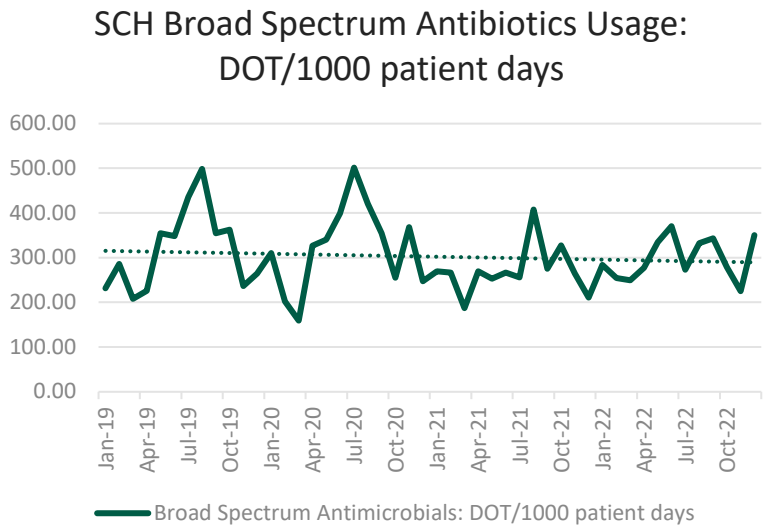
- Monthly
  - Broad Spectrum Antibiotics
    - Med-Surg & ED communication board posting
- Quarterly
  - Antibiotic Usage Report & UTI/SSTI/ED/PNA ABx MUE
    - Medication Safety Committee (Safety highlights)
    - Pharmacy & Therapeutics / Antimicrobial Stewardship Committee (Full report)
    - Medical Executive Committee (Summary slides)
- Annually
  - Continuing Education for Physicians
    - Physicians Quarterly Medical Staff Meeting
  - Learning module for Nursing

Broad Spectrum Antibiotics

January 2023

Broad Spectrum Antibiotic Use: Days Of Therapy per 1000 patient days (% of total)														
2021	Target	2022 YTD	Jan 2022	Feb 2022	Mar 2022	Apr 2022	May 2022	Jun 2022	Jul 2022	Aug 2022	Sep 2022	Oct 2022	Nov 2022	Dec 2022
271 AVG (41.0%)	NSSN data TBA	298 AVG (41%)	283 / 752 (38%)	254 / 659 (39%)	249 / 805 (31%)	277 / 648 (43%)	334 / 699 (48%)	370 / 877 (42%)	272 / 633 (43%)	332 / 756 (44%)	343 / 677 (51%)	279 / 608 (46%)	225 / 742 (30%)	350 / 863 (41%)

	Total Antibiotic Use 2022 Q1-Q3	Broad Spectrum ABx Use 2022 Q1-Q3
Sparrow Main	513.9	217.9
Carson	725.2	243.2
Clinton	**745.7**	**311.3**
Eaton	703	250.8
Ionia	735.6	268.9
Sparrow Specialty	888.6	523.3



Trends in Antimicrobial Usage

2021 vs Q4 2022

Drug	2021 AVG DOT/1000 patient days		Q4 2022 AVG DOT/1000 patient days
Cefepime	102	↘	**85**
Ciprofloxacin	16	↘	**11**
Ertapenem	2	↗	**9**
Levofloxacin	26	↘	**23**
Linezolid	9	↘	**8**
Meropenem	8	↗	**10**
Pip-Tazo	42	↘	**30**
Vanco IV	64	↗	**89**

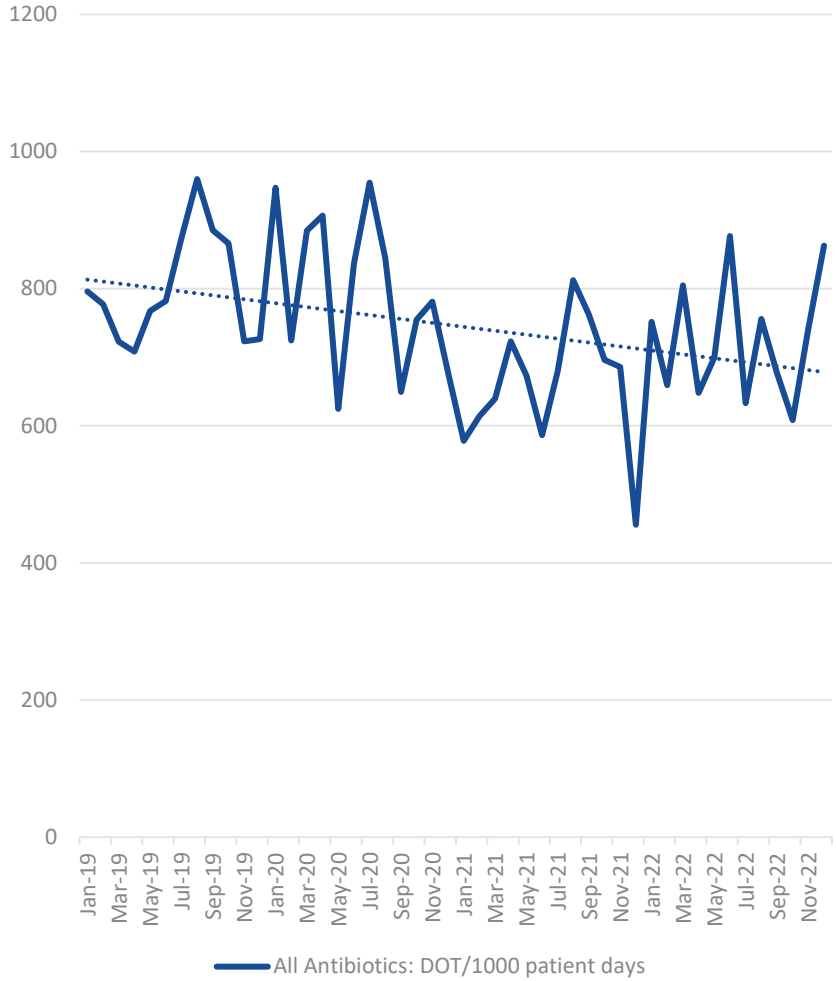
FDA: Fluoroquinolones associated with disabling and potentially irreversible serious adverse reactions. Avoid, if possible, for bronchitis, sinusitis, and uncomplicated UTI.

FDA: consider carbapenems as agents of last resort to minimize resistance.

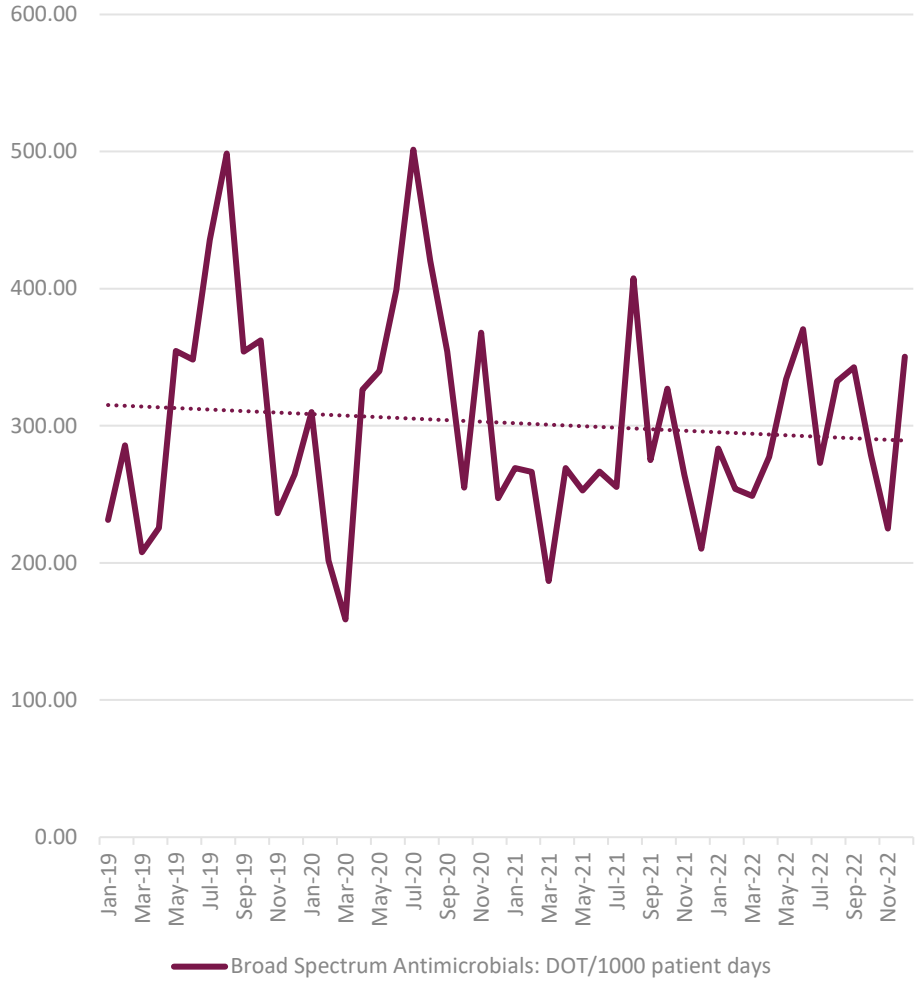
Nasal MRSA PCR may prove lack of indication for vancomycin IV in CAP cases.

Linezolid is recommended as 1st line agent for pneumonia, but if SSRI or SNRI still consider vancomycin IV.

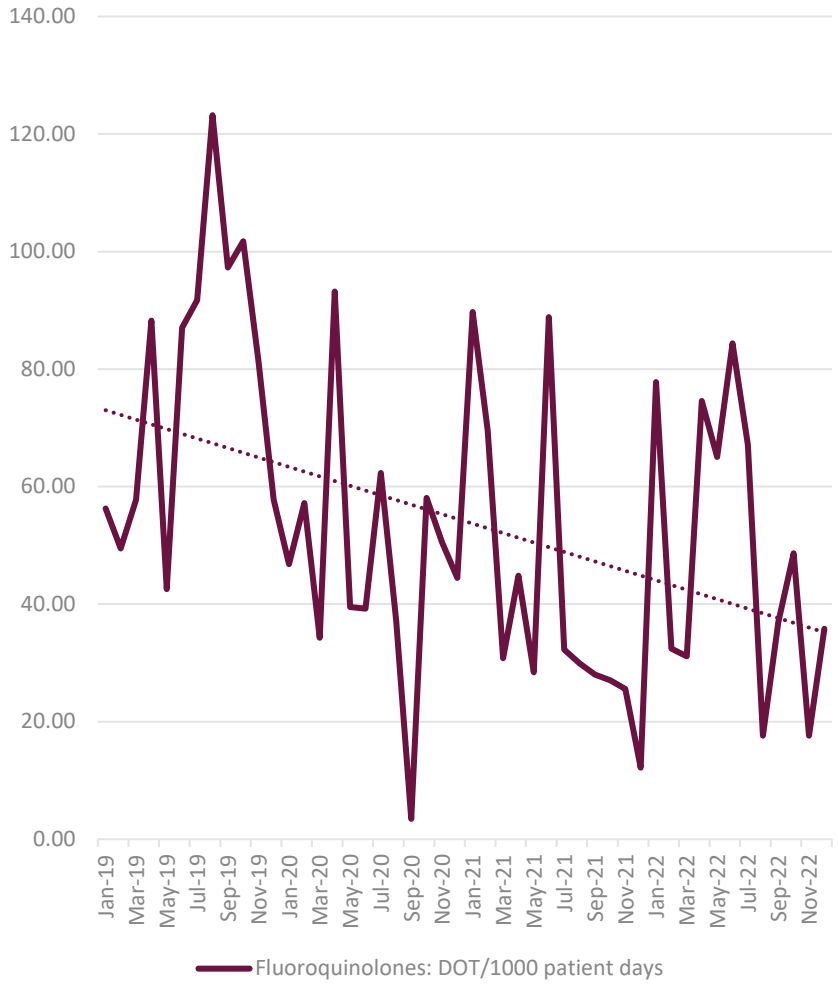
SCH All Antibiotics Usage: DOT/1000 patient days



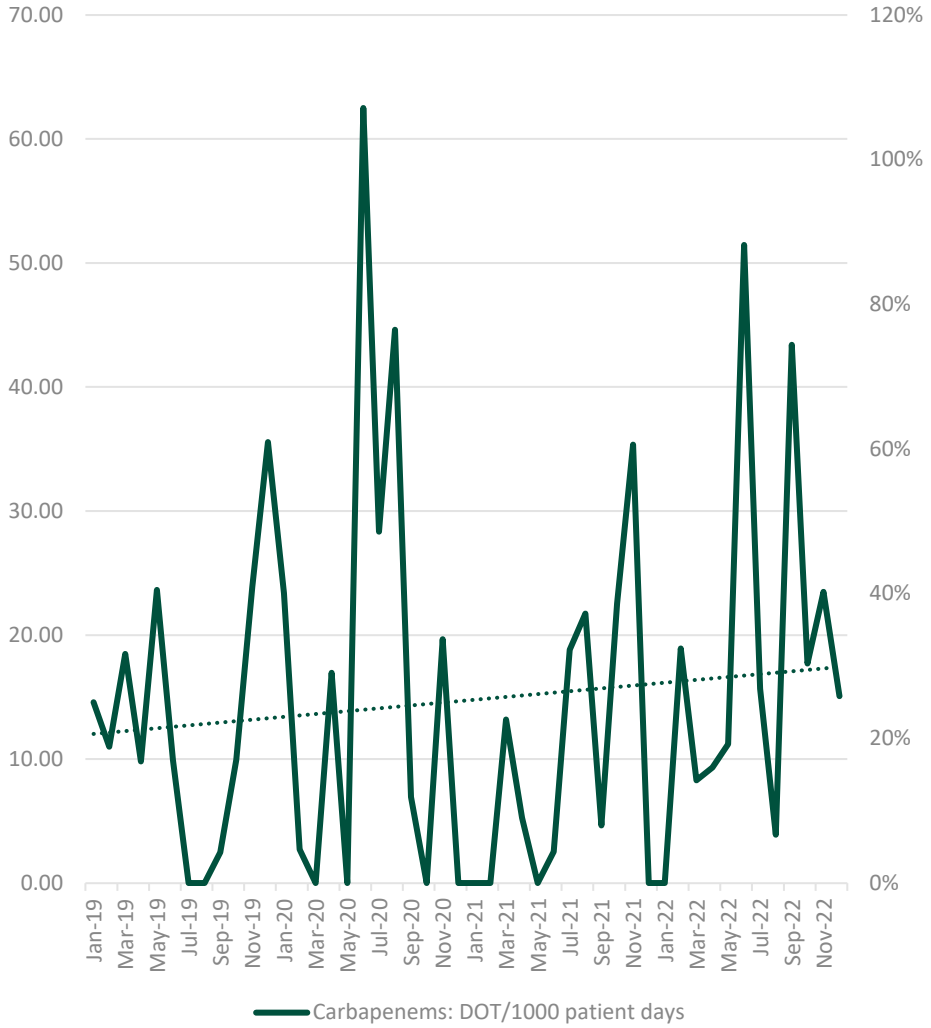
SCH Broad Spectrum Antibiotics Usage: DOT/1000 patient days



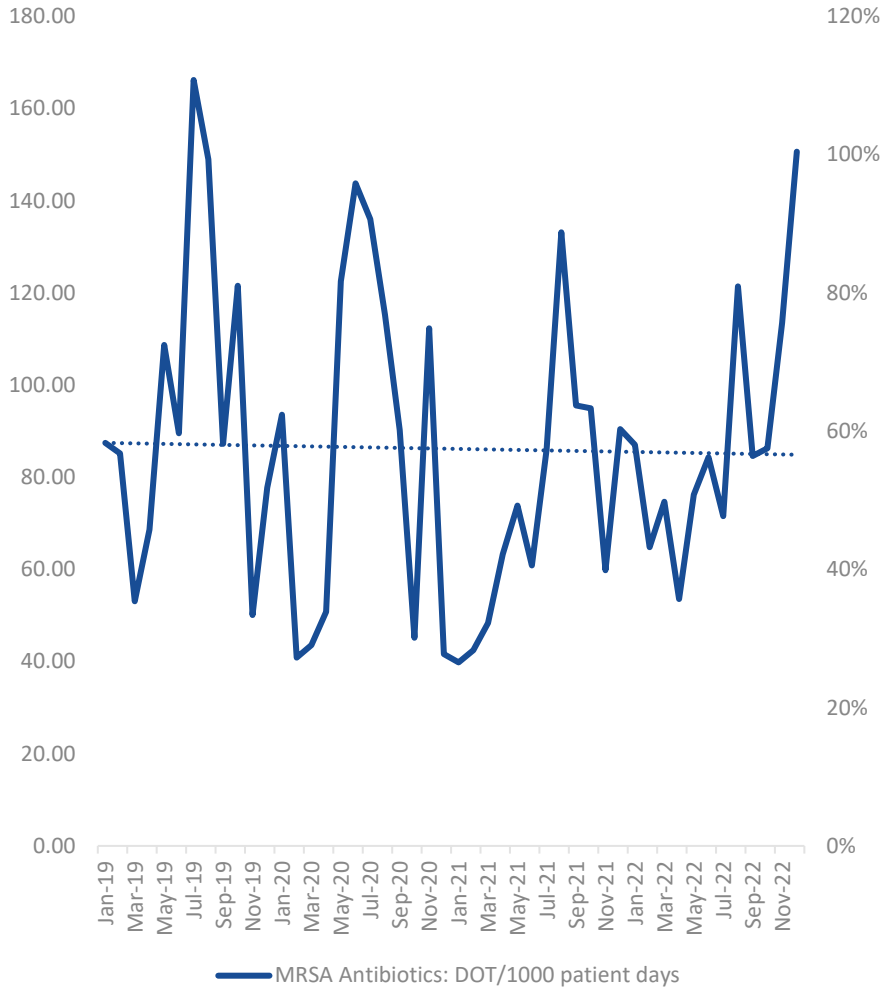
SCH Fluoroquinolone Usage: DOT/1000 patient days



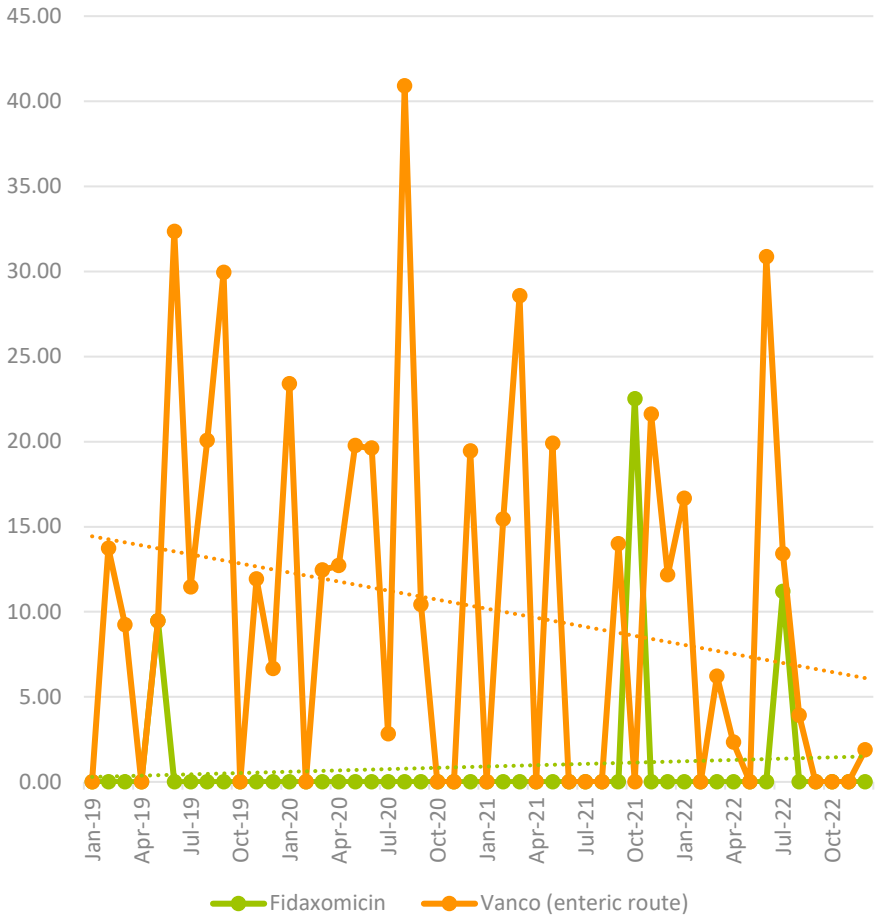
SCH Carbapenem Usage: DOT/1000 patient days



SCH Anti-MRSA Antibiotic Usage: DOT/1000 patient days



SCH *Anti-C difficile* Antibiotic Usage: DOT/1000 patient days



YTD 2022 Sparrow Health System Comparative Antibiotic Use

as Days / 1000 patient days and (% of total)

Hospital	Total Abx Use	Broad Spectrums	Fluoroquinolones	Carbapenems	MRSA ABx
Sparrow Main	517.1	217.9 (42.1%)	15.4 (3.0%)	20.3 (3.9%)	82.9 (16.0%)
Carson	718.2	243.2 (33.9%)	30.4 (4.2%)	4.9 (0.7%)	58.6 (8.2%)
Clinton	**746.1**	**311.3 (41.7%)**	**62.2 (8.3%)**	**7.2 (1.0%)**	**85.5 (11.5%)**
Eaton	715.8	250.8 (35.0%)	30.2 (4.2%)	13.3 (1.9%)	97.6 (13.6%)
Ionia	700.7	268.9 (38.4%)	37.8 (5.4%)	8.4 (1.2%)	91.2 (13.0%)
Sparrow Specialty	958.1	523.3 (54.6%)	22.5 (2.3%)	73.2 (7.6%)	204.5 (21.3%)

SCH Pneumonia Antimicrobial Use Evaluation Q4 2022

n=30

- Inpatient LOS: 3.3 days (↘ from 4.1 days in 2021)
- Durations of therapy: Inpatient avg: 3.2 days (↘ from 3.7 days in Q4 2021)
  Outpatient avg: 3.2 days (↘ from 3.3 days in Q4 2021)
  Total avg: 6.6 days (↘ from 7.1 days in Q4 2021)

- Procalcitonin in applicable patients: 82%
- Nasal MRSA PCR in applicable patients: 100%
  - Reminder: this test is very predictive for ruling out MRSA as the cause of pneumonia when PCR result is NOT DETECTED, but inaccurate in predicting MRSA cause of pneumonia if result is DETECTED.

- Initial Abx orders appropriate: 93% ordered (Pharmacist recommendations: 2 → Dr accepted 100%)
- De-escalation recommendation by Pharmacy: 6 → Acceptance by Physician: 100%
- Early readmission rate: 0

- Encourage assessment for Code Sepsis and use of Epic sepsis order sets or pathways.
- Encourage use of pneumonia order sets and Pathways for antibiotic selection for sepsis.

Automated vs Manual Reporting

- Abx MUEs require extensive gathering of data from patient charts, review of Pharmacist I-Vents and Lab data
- Epic Dashboard provides dashboard DOT data
- 2023: Next project:
  - Request for Epic report to pull usage data of antibiotics from order sets/panels/pathways