DEPARTMENT OF MEDICINE
COLLEGE OF MEDICINE

Weakening the waves: Impact of a syndrome-based antimicrobial stewardship intervention during COVID-19

SAINT ANTHONY HOSPITAL

Alfredo J. Mena Lora MD[1,2], Fischer Herald PharmD[1], Brenna Lindsey MPH[1], Stephanie Echeverria MPH[2], Mirza Ali CIC[2], Rodrigo Burgos PharmD[1]
(1)University of Illinois at Chicago, College of Medicine, Chicago, IL, (2) Saint Anthony Hospital, Chicago, IL

Background

- Lower respiratory tract infections (LRTIs) from SARS-CoV-2 are difficult to distinguish from other viral or bacterial etiologies.
- This has led to increased antimicrobial use (AU) during the pandemic and concerns for concomitant rise in antimicrobial resistance (AMR).
- It is crucial for antimicrobial stewardship (ASP) to develop strategies to mitigate excess AU and curve AMR.
- We leveraged a syndrome-based ASP intervention targeting LRTIs and the use of anti-Pseudomonal beta lactams (APBL) during the COVID-19 pandemic

Methods

- We incorporated COVID-19 elements into a syndrome-based prospective audit and feedback (PAF) at an urban community hospital.
- Elements included EMR order sets (Figure 1) that discouraged routine AU for COVID-19 and PAF targeting LRTIs and COVID-19 therapies.
- Empiric selection discouraging APBL was incorporated during the first COVID-19 wave.
- Order sets and PAF were then modified to reflect novel COVID-19 therapeutics and AU was strongly discouraged in subsequent waves.
- Data on AU and AMR from 2018-2022 was reviewed.

Figure 1. Electronic medical records COVID-19 antimicrobial order set

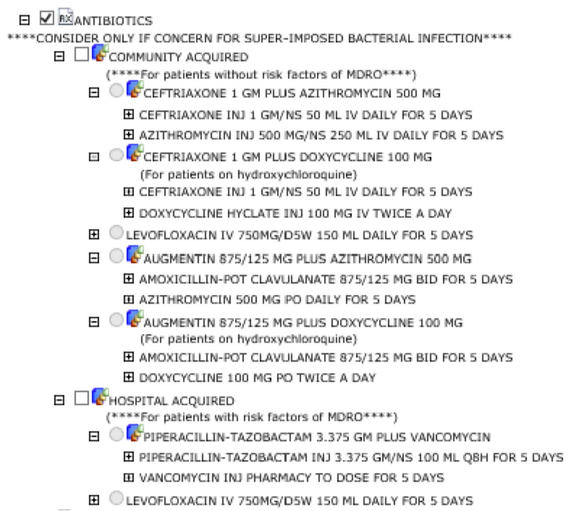


Figure 2. Antimicrobial use (DOT/1000) before and during the COVID-19 pandemic

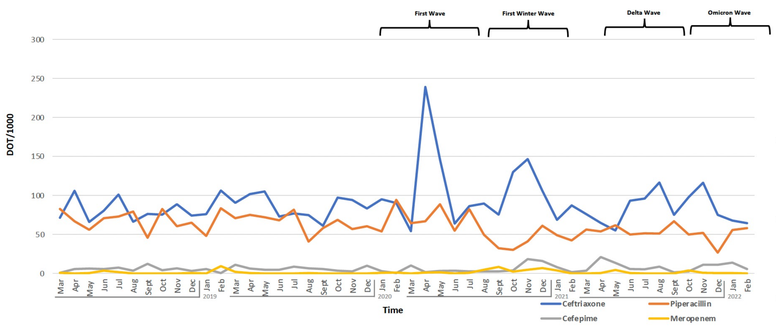


Figure 3. Antipseudomonal beta lactam use before and during the COVID-19 pandemic

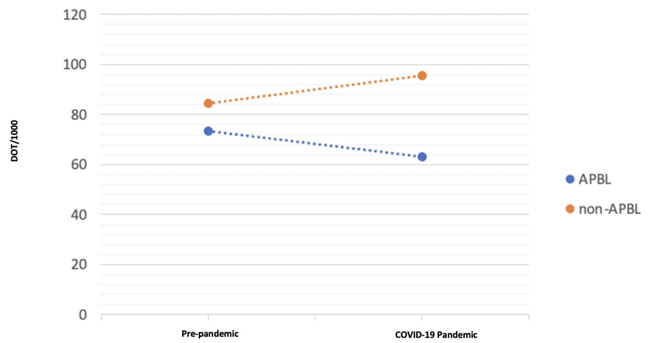
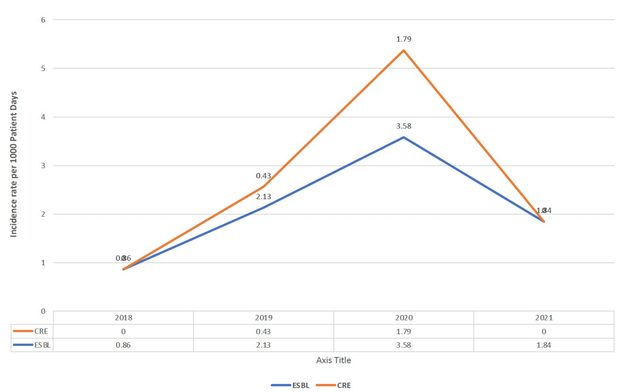
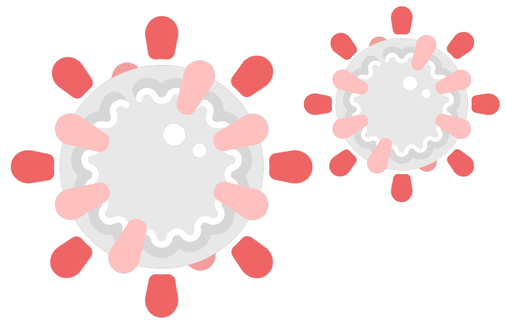


Figure 4. Incidence of multidrug resistance organisms before and during the COVID-19 pandemic



Results

- Average quarterly AU increased during the first pandemic year by 8.7%, from 359.5 to 391 days of therapy per 1000 patient days (DOT/1000), with peaks 22.5% above the pre-pandemic average during COVID-19 surges.
- AU increased each COVID-19 surge, with smaller peaks each subsequent wave.
- DOT/1000 declined 29% from the first wave to the Omicron wave.
- AU decreased the second year to 318, an 18.6% decrease from the first pandemic year.
- Ceftriaxone use increased during surges, reflecting our LRTI guidelines (Figure 2).
- Peaks declined each subsequent wave, from a peak of 239 in the first wave to 75 during Omicron, a 68% decrease.
- The average monthly DOT/1000 for APBL decreased from 73.51 to 63.21 (Figure 3).
- Incidence rate of ESBL and CRE initially rose an d then declined (Figure 4).



Conclusions

- ASP successfully incorporated COVID-19 elements and steered AU during the pandemic.
- Though total AU increased, APBL use declined and AU peaks decreased with each COVID-19 wave, reflecting adherence with ASP recommendations.
- AMR increased during the first year and subsequently declined.
- ASP can play a vital role guiding AU during respiratory pandemics.

Alfredo J Mena Lora, MD FACP
amenalor@uic.edu / amenalora@sahchicago.org