Application of Defined Daily Dose to Antibiotic Prescribing in Massachusetts Jails #1766

BART Szewczyk MS MPH,
Maureen Campion PharmD BCIDP,
Tara Bylsma MD,
Gabriela Andujar Vazquez MD,
Shira Doron MD, Alysse G. Wurcel MD MS

BACKGROUND

Antibiotic prescribing has gone largely unstudied in the carceral healthcare setting. The Defined Daily Dose (DDD) is a benchmarking metric recommended by the World Health Organization. To date, antibiotic prescribing has gone largely unstudied in the carceral healthcare setting.

METHODS

We collected de-identified antibiotic prescription data from the Massachusetts State Office of Pharmacy Services. We calculate the total antibiotics consumed in a year at each facility.

This is the equation to calculate the Defined Daily Dose:

$$\frac{\frac{\text{Total grams of Antibiotic A consumed in a year}}{\text{WHO defined maintenance dose of Antibiotic A}}}{\text{Total population}} \times 1000$$

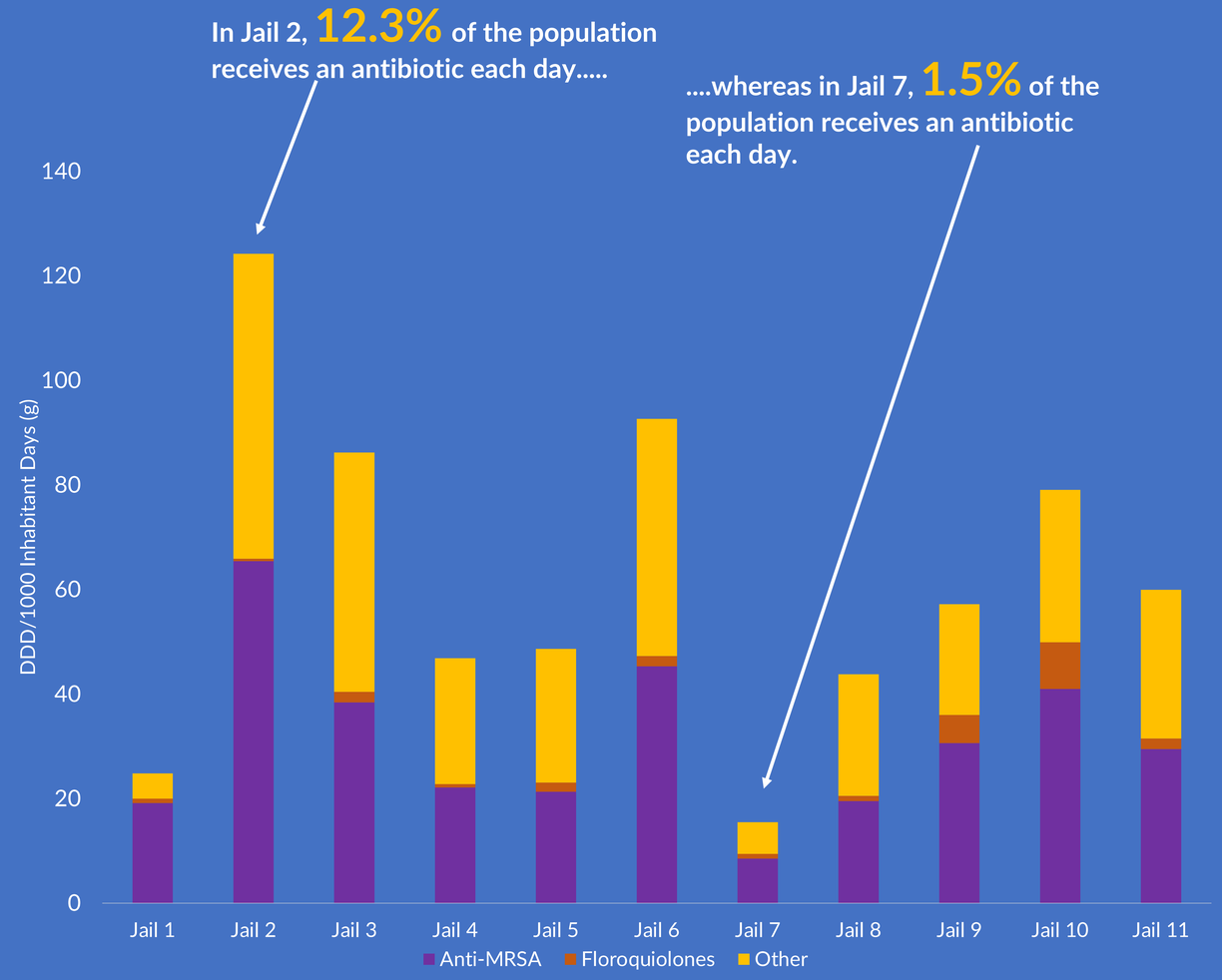
Issue we encountered: How do you define the total population of a jail?

Due to the challenges of accessing jail population data, we estimated the total population using average daily populations (ADP) and average lengths of stay. ADP data is publicly available in the state of Massachusetts. Average weekly turnover rates for different jail sizes are published annually by the Bureau of Justice Statistics within the US Department of Justice.

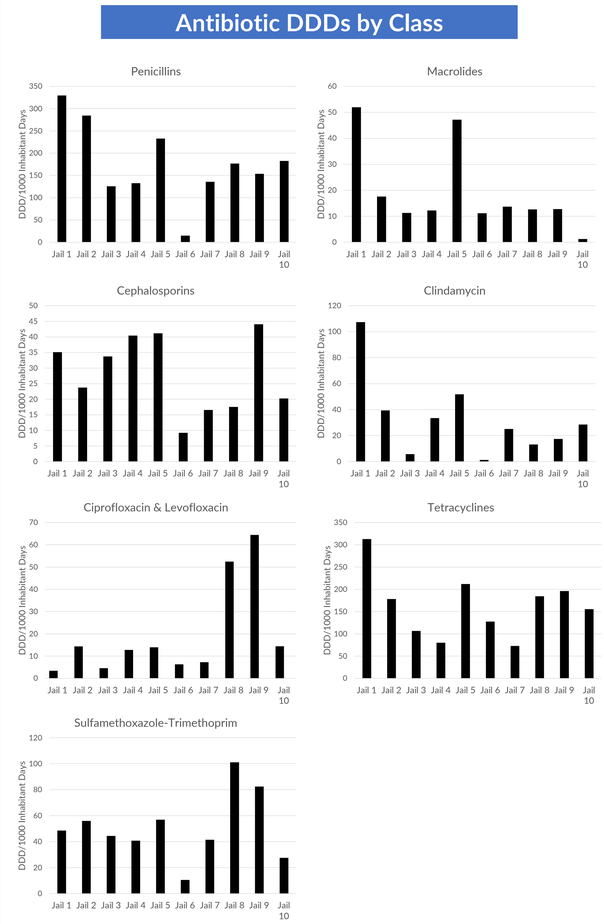
$$\frac{\frac{\text{Total grams of Antibiotic A consumed in a year}}{\text{WHO defined maintenance dose of Antibiotic A}}}{\text{ADP} \times 7 \text{ days} \times \text{weekly turnover rate for jail that size} \times 52 \text{ weeks}} \times 1000$$

Scan with your camera to view the full abstract

Benchmarking antibiotic usage in **jails** is possible, and this healthcare setting can be the next frontier in **combating antimicrobial resistance.**



RESULTS: Certain jails (e.g., Jail 2) were high users of antibiotics, while other jails (e.g., Jail 7) were low users (above). We also found heterogeneity in the classes of antibiotics used across the jails. Certain jails appear to prefer cephalosporins (e.g., Jail 1) while others (e.g., Jail 8) frequently use fluoroquinolones like Ciprofloxacin and Levofloxacin (top right).



CONCLUSION:

Variability in antibiotic prescribing practices across different jails in Massachusetts suggests the need for further evaluation of current antibiotic practices. Metrics like the DDD can be successfully adapted to meet the challenges of the carceral healthcare setting. Antibiotic prescribing in jails requires further study.

Tufts University School of Medicine Public Health

Tufts Medical Center