



A Public Health Department's Perspective:

Utilizing ICD-10 Codes in ESSENCE to Identify CRE Trends and Target Hospitals for MDRO Outreach

Christa Cook, MPH, CIC
Williamson County and Cities Health District



Carbapenem-Resistant Enterobacteriaceae (CRE)
Source: Texas Department of State Health Services

Background

- The Electronic Surveillance System for the Early Notification of Community-Based Epidemics (ESSENCE) is a surveillance system used to detect outbreaks or notable public health events in the community through emergency department visits and medical records.
- Carbapenem-Resistant Enterobacteriaceae (CRE) are bacteria with resistance to common antibiotics and can easily be spread in healthcare facilities through contact with infected individuals or contaminated medical equipment. They are considered a significant public health threat.
- This analysis aimed to determine if querying Williamson County hospital data in ESSENCE with ICD-10 codes related to “resistance to antimicrobial drugs” could be used to predict CRE trends in a local jurisdiction as well as if hospitals with higher counts of queried records could be identified for multi-drug resistance organism outreach education.

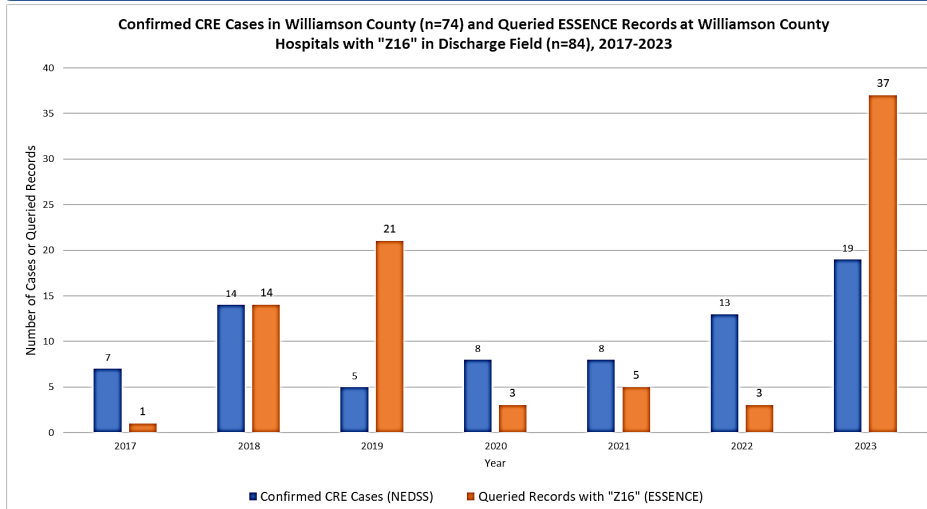
Methods

- Confirmed and probable cases of CRE in Williamson County were pulled from the Texas National Electronic Disease Surveillance System (NEDSS) for years 2017-2023.
- NEDSS data was compared to ESSENCE data query results for ICD-10 code “Z16” or “resistance to antimicrobial drugs” in the discharge diagnoses field for the same years and jurisdiction. Only Williamson County residents at Williamson County hospitals were included.
- ESSENCE query data was grouped by hospital to identify if there were any hospitals that had higher numbers of records with “Z16” tagged in their discharge diagnoses.

Results

- From NEDSS, the highest number of CRE cases occurred in 2023 with 19 cases.
- ESSENCE revealed the highest number of ICD-10 “Z16” records in 2023 with 37 records.
- ESSENCE records were low during 2017 and 2020-2022 with under 10 records annually.
- One local hospital was identified as having more than 50% of the queried records with “Z16” compared to the other hospitals.

Results (continued)



Hospital	Queried ESSENCE Records with "Z16"
Williamson County Hospital A	25
Williamson County Hospital B	45
Williamson County Hospital C	11
Williamson County Hospital D	3
Total	84

*Note: Results differ from abstract submission data due to exclusion of non-Williamson County hospital data from ESSENCE. Williamson residents that visited a non-Williamson County hospital with “Z16” were previously included in ESSENCE analysis.

Conclusions

- Utilizing ICD-10 “Z16” in ESSENCE was partially suitable for predicting CRE numbers. The year with the highest number of cases matched the year with the highest number of queried ESSENCE records. However, the general trend for other years was not as well-matched.
- Due to the COVID-19 pandemic and the limited capacity of healthcare workers during 2020-2022, it would be useful to repeat the analysis and utilize a more specific ICD-10 code for CRE. A CRE-specific ICD-10 code was created October 2023 and after use in the upcoming years, could provide more suitable for predicting trends for cases of this bacteria.
- This study was successful in identifying hospitals for outreach. The important partnership between hospital data and epidemiologists should continue to be explored so that trends can be used for public health and infection prevention.