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BACKGROUND

- *Clostridioides difficile* infection (CDI) continues to be one of the most common causes of hospital-acquired infections in the US.[1]
- PCR ribotyping has been used to describe the molecular epidemiology and transmission dynamics of CDI.
- International studies utilizing PCR ribotyping have demonstrated that CDI populations are geographically distinct,[2,3] and access to local ribotype patterns has been shown to impact the prevalence of epidemic strains.[4]
- National US data has shown F106 to be the most common amongst community-associated CDI isolates, while F027 continues to be the most prevalent amongst hospital-acquired CDI, however no sites from Texas are included.[5]
- The *C. difficile* **Ac**ross **T**exas **U**nited **S**urveillance (CAcTUS) Network was established in 2011. Here we describe the circulating strains in Texas between 2011-2018.

METHODS

- Stool specimens from patients with a *C. difficile* positive stool test as part of routine clinical care are sent for further analysis to a centralized research laboratory at the University of Houston College of Pharmacy
  - Data included with the isolates includes: collection date, hospitalization date, patient age, and gender
- Outbreaks or emerging ribotypes are reported and investigated at the time of identification.
- *C. difficile* stool is plated onto cefoxitin-cycloserine-fructose agar (CCFA) plates and anaerobically incubated for 48–72 hours.
- Fluorescent ribotyping is performed as previously described.[6]
- This technique does not distinguish between all ribotypes; therefore, some ribotypes are reported as combined (ie, 053-163, and 014-020).
- Binary and categorical variables were compared using χ2 test.
- All statistical analyses were performed using STATA, version 15.1 (StataCorp LLC, College Station, TX).
- All P-values were from 2-sided tests, and results were deemed statistically significant at P < .05.

## RESULTS

Figure 1. Distribution of Samples Included
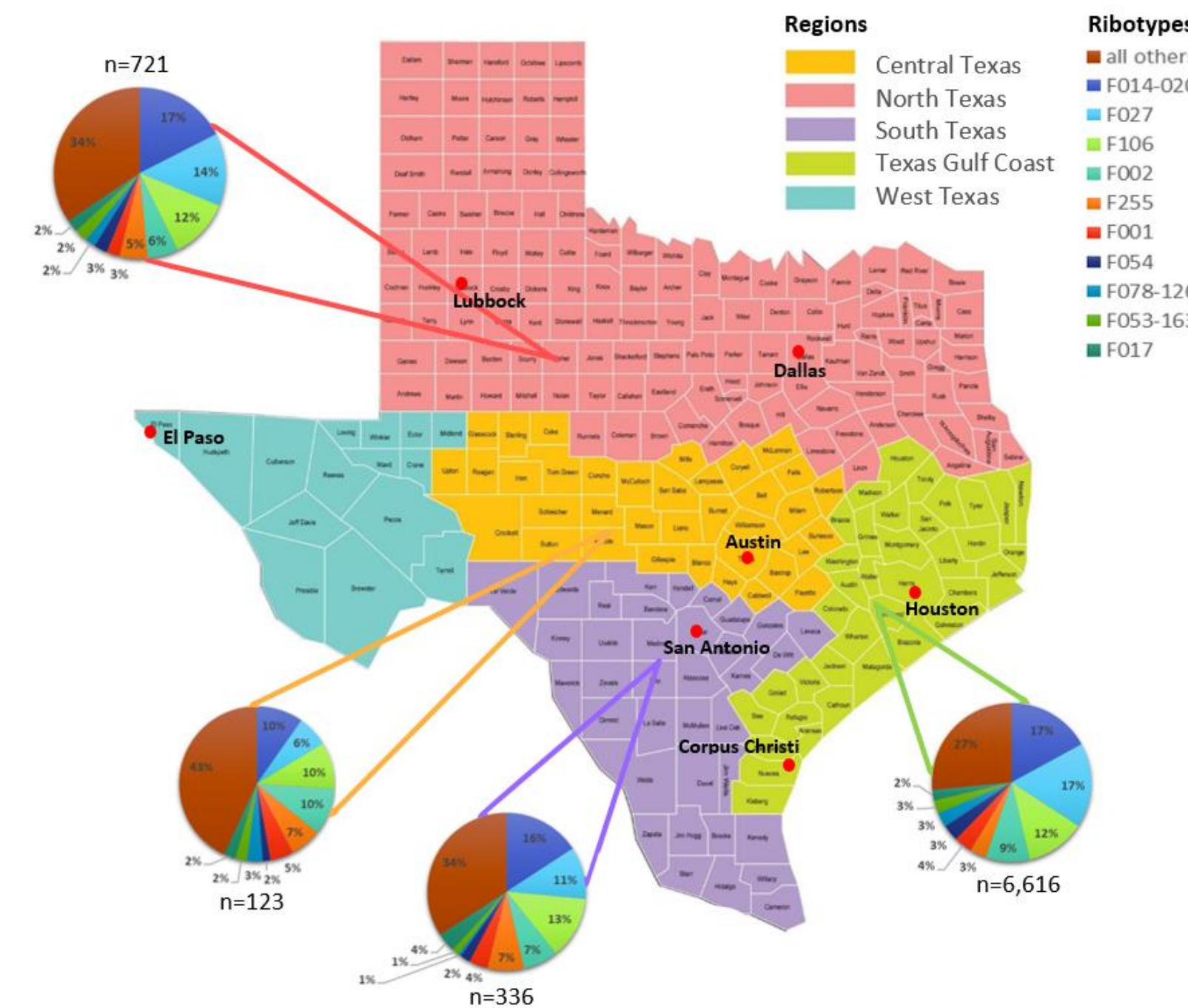
Demographics:
- Mean age is 62.5 (+/- 19) years
  - **Ribotype distribution vs. age (<65 vs. ≥65 years old), p<0.001**
- Female gender more common (58.4% (3,021/5,165)
  - **Ribotype distribution vs. sex, p=0.152**

Geography:
- Fifty four Texas hospitals sent C. difficile-positive stool specimens to the University of Houston College of Pharmacy between 2011 – 2018.
  - **Ribotype distribution vs. region of Texas, p<0.001**

Figure 2. Proportion of *C. difficile* Ribotypes Across Texas Per Year
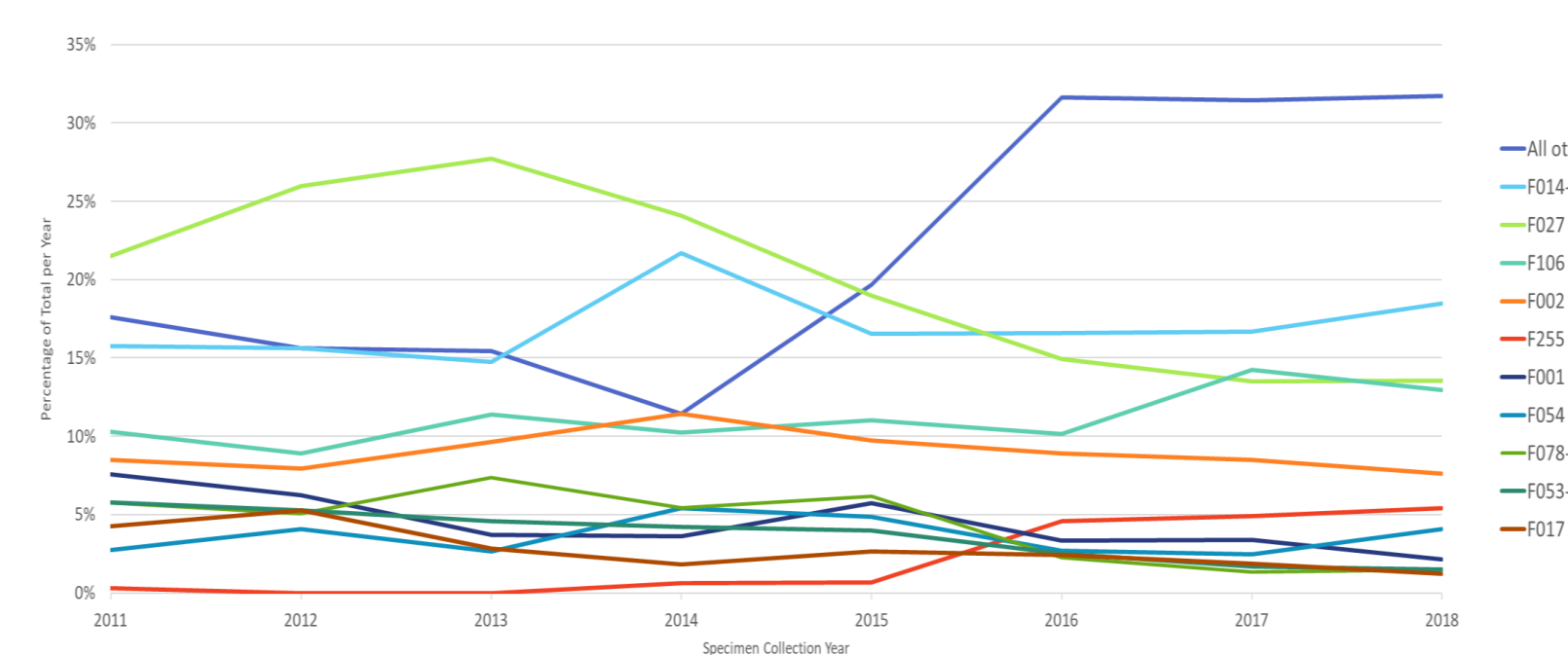
2011 (n=330)	2012 (n=416)	2013 (n=570)	2014 (n=166)	2015 (n=453)	2016 (N=1,997)	2017 (n=2,211)	2018 (n=1,653)	Ribotype
17.6%	15.6%	15.4%	11.4%	19.6%	31.6%	31.4%	31.4%	All other
15.8%	15.6%	14.7%	21.7%	16.6%	16.6%	16.7%	16.7%	F014-020
21.5%	26%	27.7%	24.1%	19.0%	14.9%	13.5%	13.5%	F027
10.3%	8.9%	11.4%	10.2%	11.0%	10.2%	14.2%	14.2%	F106
8.5%	7.9%	9.6%	11.4%	9.7%	8.9%	8.5%	8.5%	F002
0.3%	0.0%	0.0%	0.6%	0.7%	4.6%	4.9%	4.9%	F255
7.6%	6.3%	3.7%	3.6%	5.7%	3.4%	3.4%	3.4%	F001
2.7%	4.1%	2.6%	5.4%	4.9%	2.7%	2.4%	2.4%	F054
5.8%	5.0%	7.4%	5.4%	6.2%	2.3%	1.4%	1.4%	F078-126
5.8%	5.3%	4.6%	4.2%	4.0%	2.5%	1.7%	1.7%	F053-163
4.2%	5.3%	2.8%	1.8%	2.6%	2.4%	1.9%	1.9%	F017

Table 1. Ribotype Distribution by Epidemiologic Classification

Ribotype	Community Acquired (n=2,618)	Hospital Acquired (n=1,259)
F014-020	17.0%	17.3%
F027	16.3%	15.9%
F106	12.1%	13.3%
F002	9.7%	8.3%
F255	4.1%	3.3%
F001	3.3%	4.9%
F054	2.6%	3.3%
F078-126	2.8%	2.1%
F053-163	2.0%	2.8%
F017	2.2%	2.2%
All other	27.9%	26.5%

- **Ribotype distribution in community- vs. hospital-acquired CDI, p=0.076**

CONCLUSIONS

- The trends in prevalence of *C. difficile* ribotype F027 and F106 are similar to national trends, while F014-020 is more commonly reported in Texas.
- Ribotype F255 has emerged as the fifth most common ribotype in our statewide database between 2011 and 2018.
- Differences in the ribotype distribution were seen depending on patient age and surveillance region.

CAcTUS NETWORK

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