in the factors associated with better outcomes, and leveraged variation of size among our community hospitals in the analyses by Hawkins et al.[1]

1. Patient data collection: The harmonized approach to data collection from the eight ICUs of the study by Hawkins et al[1] allowed us to identify comanagement methods as a significant differentiating factor. Hospital size was not predictive. Generally speaking, current electronic systems and integration expertise allow the transfer of data through electronic interfaces and routinely simplify access to many forms of clinical information. Investment in these technologies and the proper training of critical care professionals may have prevented differences of electronic data transfer from being a detectable distinguishing factor for length of stay (LOS) outcomes in the study.

2. Authority to intervene: One of the important findings of the study by Hawkins et al[1] is that it provides new information about how alternative approaches under the administrative control of the sponsoring or subscribing institutions affect outcomes and how costs compare in terms of LOS outcomes.

3. Collaboration between telemedicine and bedside ICUs: We strongly agree with the authors regarding the importance of collaborative relationships among ICU providers. We also agree that having staff work on both sides of the camera helps to promote these relationships. The use of two-way telemedicine systems that provide frequent communications, and which include patients who have the capacity to participate, is another effective way to form and develop these relationships. We respectfully point out that large comparative studies that included acuity-adjusted outcomes have not identified the size of the ICU telemedicine program or number of supported ICUs as associated with meaningful differences of outcomes.[2] Some studies have noted cost benefits to rural hospitals from reduced transfers and keeping patients closer to their homes.[3]

4. Standardized practice evolution: We agree that the benefits associated with standardizing care can be difficult to achieve.[4] The sharing and benchmarking[5] of data and the reporting solutions that are part of larger programs have provided powerful tools for encouraging the adoption of standard best practices and measuring the impact of these changes on critical care outcomes.[6]

We also agree that studies using the best available analytics tools to make meaningful comparisons of alternative ICU telemedicine approaches and practices are important.

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A Patient-Based Analysis of the Geographic Distribution of *Mycobacterium avium* complex, *Mycobacterium abscessus*, and *Mycobacterium kansasii* Infections in the United States

To the Editor:

Nontuberculous mycobacteria (NTM) are ubiquitous and prevalent in the environment.[1] The prevalence of NTM among the elderly is 47 patients per 100,000 people.[2,3]

There is a lack of information on NTM species distribution on a state-by-state level in the United States.

TABLE 1] Number and Percentage of Subjects With Positive Results for MAC, *M abscessus,* and *M kansasii* Infection Relative to the Total Number of Subjects With Nontuberculous Mycobacterial Infection by State

State	MAC		M abscessus		M kansasii	
	No.	%	No.	%	No.	%
Alabama	3	100	0	0	0	0
Alaska	1	50	1	50	0	0
Arizona	11	79	2	14	0	0
California	42	69	7	12	4	7
Colorado	10	83	1	8	0	0
Connecticut	6	100	0	0	0	0
Delaware	1	50	0	0	0	0
Florida	60	71	25	29	6	7
Georgia	4	44	3	33	0	0
Hawaii	6	67	3	33	0	0
Idaho	1	100	0	0	0	0
Illinois	6	75	5	63	0	0
Indiana	1	50	0	0	0	0
Kansas	3	75	3	75	0	0
Kentucky	1	50	0	0	0	0
Louisiana	6	100	1	17	0	0
Maine	1	100	0	0	0	0
Maryland	8	57	5	36	2	14
Massachusetts	10	63	3	19	0	0
Michigan	9	50	6	33	1	6
Minnesota	11	85	1	8	0	0
Mississippi	3	60	2	40	0	0
Missouri	5	100	0	0	0	0
Montana	0	0	0	0	0	0
Nevada	2	100	0	0	0	0
New Hampshire	2	67	0	0	0	0
New Jersey	8	67	2	17	1	8
New Mexico	0	0	1	50	0	0
New York	26	50	10	19	3	6
North Carolina	13	77	3	18	1	6
North Dakota	0	0	0	0	0	0
Ohio	8	100	1	13	0	0
Oklahoma	1	50	1	50	0	0
Oregon	10	77	3	23	0	0
Pennsylvania	20	59	6	18	0	0
Rhode Island	1	50	0	0	0	0
South Carolina	6	100	1	17	1	17
Tennessee	1	50	0	0	0	0
Texas	29	80	8	22	1	3
Utah	2	100	2	100	0	0
Vermont	1	100	0	0	0	0
Virginia	18	95	3	16	2	11

(Continued)

State	MAC		*M abscessus*		*M kansasii*	
	No.	%	No.	%	No.	%
Washington	10	100	0	0	1	10
Washington, DC	2	33	2	33	0	0
West Virginia	1	100	0	0	0	0
Wisconsin	4	57	1	14	1	14
Total	374		112		24	

M = Mycobacterium; MAC = *Mycobacterium avium* complex.

Here, we present data on the geographic distribution of pulmonary *Mycobacterium avium* complex (MAC), *Mycobacterium abscessus*, and *Mycobacterium kansasii* infections in the United States.

We conducted a patient-centered, cross-sectional study via online survey that was distributed to patients who had received a diagnosis of pulmonary NTM. All data were collected between January and March 2016, using the NTM Info & Research, Inc. website (NTMinfo.org). Heat map figures were generated to provide data on the density of distribution for the most commonly reported NTM isolates across the various states. The data grid was based on the geographic coordinates of each subject's city of residence and was generated by the Kriging method and available US mainland data.

Five hundred and thirty-seven subjects from 46 US states responded to the survey. The mean age was 66.9 years (range, 13 to 91 years), and 95% of the study participants were female. Previous treatment for NTM

was reported in 259 (48%), active anti-NTM therapy in 139 (26%), and no treatment in 139 (26%). Five states had the highest number of respondents (n = 268, or 50%), including the following: Florida, 85 (15.8%); California, 61 (11.3%); New York, 52 (9.7%); Texas, 36 (6.7%); and Pennsylvania, 34 (6.3%).

All respondents reported their isolated *Mycobacterium* species. Seven hundred and twenty-eight isolates were reported as some subjects reported being infected with more than one species. Table 1 shows the data of NTM-infected subjects and their mycobacterial species by state. Figures 1 and 2 show the distribution of MAC- and *M abscessus*-infected subjects at the state level.

Limited studies previously described the distribution of MAC, *M abscessus*, and *M kansasii* infection in individual states in the United States. We present new data mapping self-reported NTM infections confirming the coastal predominance of NTM. The higher frequency of NTM infection in these areas supports
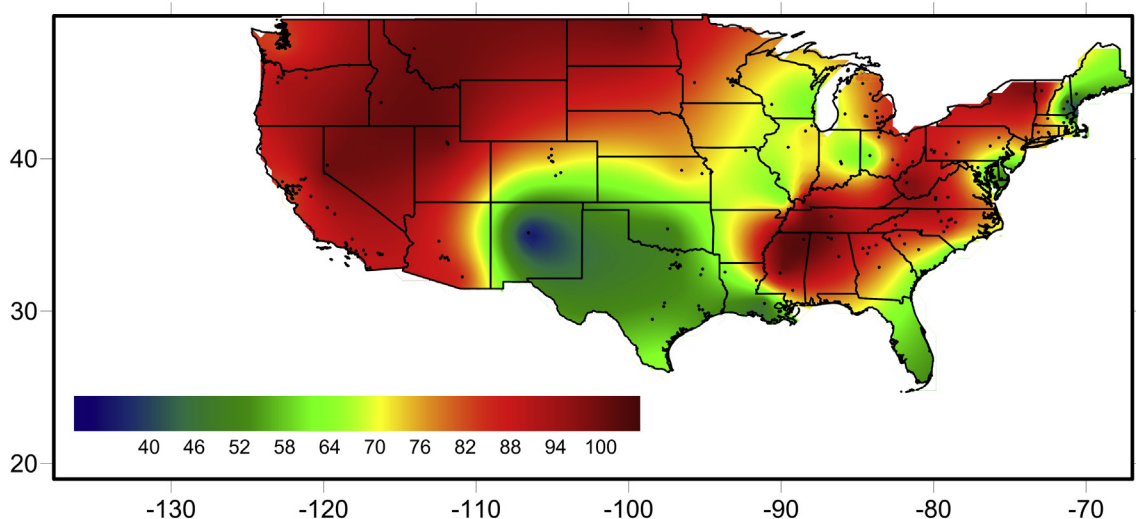

Figure 1 – *Heat map depicting the percentage of subjects with* Mycobacterium avium *complex (MAC) infection across the United States, reported as the percentage of subjects with positive results for MAC relative to the total number of nontuberculous mycobacteria-infected subjects at the state level.*
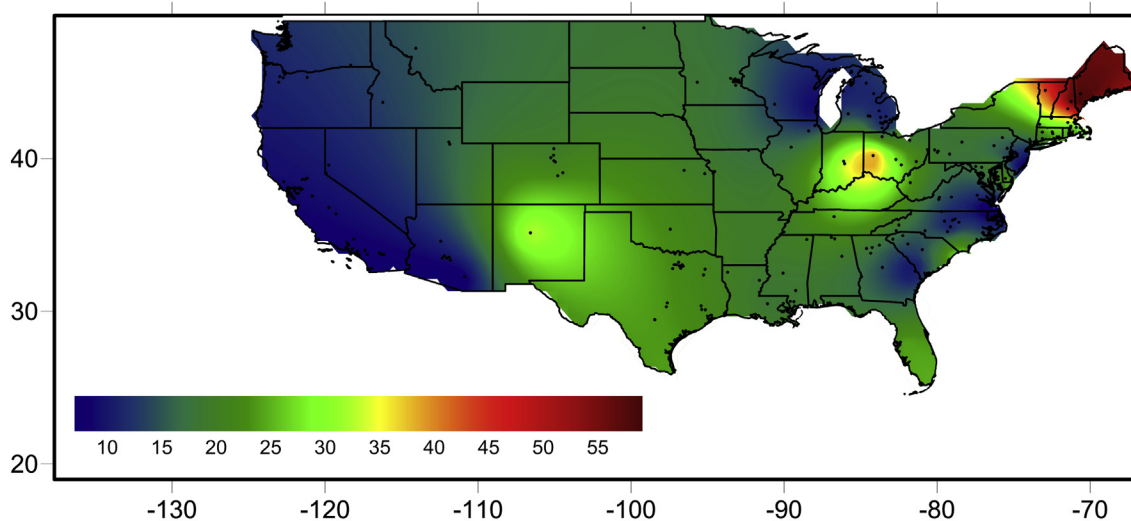
Figure 2 – *Heat map depicting the percentage of* Mycobacterium abscessus-*infected subjects across the United States, reported as the percentage of subjects with positive results for* M abscessus *infection relative to the total number of nontuberculous mycobacteria-infected subjects at the state level.*

observations that very high numbers of NTM are present in coastal swamps[4] and estuaries.[5] This observed difference may be due to environmental factors such as water characteristics and geochemical differences in soil composition.

These data will help to improve the detection of NTM disease in the United States and enhance our knowledge of disease patterns. Detecting the geographic cluster of pathogenic NTM strains in the United States will help us to improve our preventive measures for those with underlying pulmonary disorders such as bronchiectasis.

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