ASRA PAIN MEDICINE
23rd Annual Pain Medicine Meeting
November 21-23, 2024 | #ASRAFALL24

Geographic Distribution and Access Disparities of Interventional Pain Management Physicians Across RUCA Codes

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BACKGROUND

Medicare and Medicaid provide coverage to greater than one-third of all insured Americans, and the majority of our aging population relies on this coverage to access care. Studies have shown that access to care is not uniformly distributed throughout the country. In particular, access to specialty care, such as interventional pain management, varies significantly by geographic area. Studies have highlighted disparities in the availability of specialized medical services between urban and rural areas, with rural populations often facing significant barriers to accessing such care (1-2).

Objective

This study examines the geographic distribution of interventional pain management (IPM) physicians based on the Rural-Urban Commuting Area (RUCA) codes using Medicare data, aiming to identify disparities in access to specialized pain management care between metropolitan and non-metropolitan areas.

Methods

This study performed a cross-sectional analysis of Medicare Part B utilizing publicly available CMS Physician and Other Practitioners - by Provider (3) file of 2021. Data was filtered by specialty, including Pain Management and Interventional Pain Management (IPM), and excluded all other specialties. RUCA classification codes were extracted from each practicing IPM MDs as well as all other specialty MDs and analyzed to determine the geographic distribution of IPM MDs and other MDs. Statistical analysis was conducted using R 4.0.3. This study was exempt from IRB review as it utilized publicly available online CMS data per Metro Health IRB Policy.

Results

- Majority of all practicing interventional pain management MDs are located in RUCA 1 (89.73%), indicating that most practice within metropolitan area codes (Table 1)
- Only 1.43% and 0.02% of interventional pain management MDs are in RUCA 2 and RUCA 3, metropolitan areas with high and low commuting, respectively, illustrating a drop-off from the core metropolitan areas. 4.78% reside in RUCA code 4, micropolitan areas, higher than the high and low commuting metropolitan areas, and is low compared to core metropolitan areas.
- RUCA Codes 5 to 10, representing micropolitan high commuting, micropolitan low commuting, small town core, small town high and low commuting, and rural areas, have a negligible presence of interventional pain management MDs. The percentages in these areas range from 0% to 0.84%.
- No significant differences were found between the geographic distribution of IPM MDs vs other specialty MDs.

Table 1: Geographic Distribution of Interventional Pain Management Physicians in the U.S.

Table 6: 2021 Rural Urban Commuting Area (RUCA) Distribution by Specialty

Provider RUCA (2021)	RUCA Description	Interventional Pain Management MDs (n = 4,187) %	Other MDs (n= 630,777) %
1	Metropolitan area core: primary flow within an urbanized area (UA)	89.73	88.53
2	Metropolitan area high commuting: primary flow 30% or more to a UA	1.43	2.66
3	Metropolitan area low commuting: primary flow 10% to 30% to a UA	0.02	0.15
4	Micropolitan area core: primary flow within an urban cluster of 10,000 to 49,999 (large UC)	4.78	6.79
5	Micropolitan high commuting: primary flow 30% or more to a large UC	0.29	0.46
6	Micropolitan low commuting: primary flow 10% to 30% to a large UC	0.00	0.05
7	Small town core: primary flow within an urban cluster of 2,500 to 9,999 (small UC)	0.84	0.00
8	Small town high commuting: primary flow 30% or more to a small UC	0.00	0.13
9	Small town low commuting: primary flow 10% to 30% to a small UC	0.00	0.05
10	Rural areas: primary flow to a tract outside a UA or UC	0.10	1.10
99	Not coded: Census tract has zero population and no rural-urban identifier information	0.07	0.09

Discussion

- We find a high concentration of IPM MDs in metropolitan cores when compared to rural and less densely populated areas, suggesting the latter areas may have limited access to specialized pain management care. This can lead to disparities in healthcare access and outcomes.
- The data likely reflects the higher demand for interventional pain management in metropolitan areas secondary to larger populations.
- This data presents an opportunity for policy makers to seek a more equitable distribution of pain management care across geographic regions.

References

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