Background: As part of its support of the Image Wisely Initiative, the SNMMI urges nuclear medicine providers to optimize diagnostic studies to obtain the best image quality with the lowest radiation dose. The imaging community is poorly informed on radiation dose used in current practice. The aim of this study was to determine geographic patterns associated with elevated radiation dose.

Methods: Reports from 612 facilities applying for accreditation in 2012 by the Intersocietal Accreditation Commission (IAC) were evaluated. 3 to 5 reports from each facility were used to determine the total administered radiation dose per US Census defined region (Northeast, South, Midwest and West) and state. States were also ranked based on average effective radiation dose. States with average administered dose \( \geq 20 \text{ mSv} \) were compared to obesity prevalence by state. The percent of doses \( \geq 20 \text{ mSv} \) was determined.

Results: 2992 patient reports were reviewed. There was a significant association (p=.008) between geographic area and frequency of use of radiation dose \( \geq 20 \text{ mSv} \) with the West (14.8%) and South (13.8%) having the highest percentage. Facilities in the Northeast (6.9%) and Midwest (4.0%) have a lower frequency of doses \( \geq 20 \text{ mSv} \). Alabama, Missouri and Georgia had the highest average effective radiation dose \( \geq 20 \text{ mSv} \). Kentucky, Rhode Island and Pennsylvania demonstrated lowest average effective radiation dose of \( \leq 13 \text{ mSv} \). For states demonstrating an average radiation dose \( \geq 20 \text{ mSv} \), there was no correlation between percentage of doses \( \geq 20 \text{ mSv} \) and prevalence of obesity.

Conclusion: There is considerable geographic variance in average effective radiation dose. Although, states in the West and South had a significantly higher percentage of doses \( \geq 20 \text{ mSv} \), there was no correlation with obesity and thus no apparent reason for increased radiation dose in those areas.
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