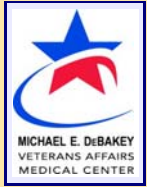# Parkinson's Disease and Parkinsonism among US Veterans: Demographic and Geographic Distribution in FY2002

Suzanne Moore, BA[1] and Eugene C. Lai, MD, PhD[1,2]

[1]Michael E. DeBakey Veterans Affairs Medical Center, Parkinson's Disease Research, Education and Clinical Center, [2]Baylor College of Medicine
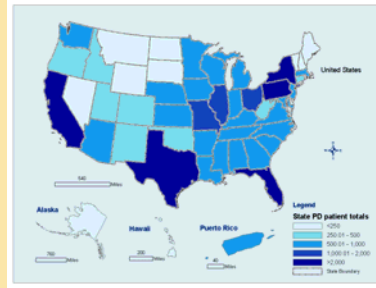
OBJECTIVE: To describe the demographic and geographic distribution of veterans with an ICD-9 diagnostic code for Parkinson's Disease (PD) (332.0) and parkinsonism (PM) (332.1) within the US Department of Veterans Affairs (VA) health care system in the fiscal year (FY) 2002.
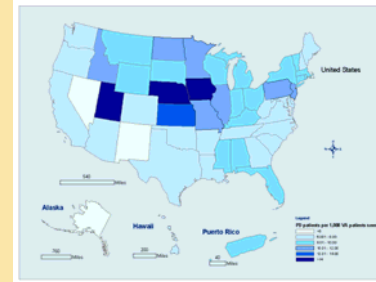
BACKGROUND: Over 4.5 million veterans received health care in medical facilities at the VA in FY2002. Data collected from these facilities across the US were transmitted to a VA central repository, the Austin Automation Center (AAC). The VA Planning Systems and Support Group (PSSG) maintains additional downloadable files for use in Geographic Information System (GIS) analysis.

METHODS: ICD-9 diagnostic codes for PD (332.0) and PM (332.1) were used to query the AAC databases, retaining one record for each unique individual. Demographic variables such as age and gender were collected along with geographic variables such as VA facility, zip code, and state and county of residence. VA geographic information was linked to US Department of Agriculture Economic Research Service tables for Rural-Urban Continuum Codes. GIS software (ESRI ArcGIS) was used to create maps showing the distribution of affected veterans by both state and county.
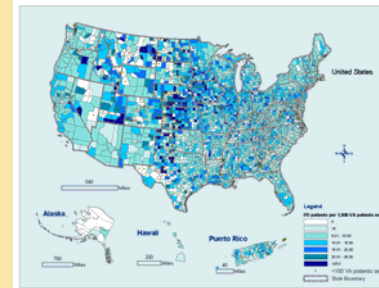
RESULTS: For FY2002, 43,778 unique veterans with at least one occurrence of ICD-9 code 332.0 or 332.1 were seen nationally. Most, (88%) had ICD code 332.0, 4% 332.1, and 8% both codes. PD patients were 98.5% men and their mean age was 75. PM patients were 98% men with a mean age of 71. PD patients' address zip codes placed them an average of 14 miles from a VA out-patient clinic and 40 miles from a VA medical center. PM patients lived an average of 12 miles from out-patient clinics and 32 miles from VA medical centers. There was regional variation in the number of patients seen per county and State.
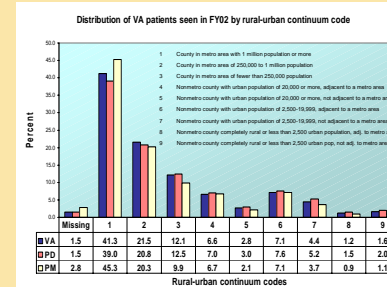

Number of patients with ICD-9 code 332.0 seen in each state or territory within the Department of Veterans Affairs health care system during FY2002.
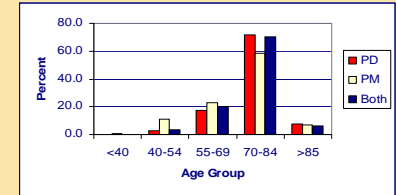

Prevalence of PD patients by State : number of PD patients (ICD-9 332.0) per 1,000 VA patients seen during FY2002.

Prevalence of PD patients by County: PD patients (ICD-9 332.0) seen per 1,000 VA patients seen in FY 2002.

Distribution of VA patients seen in FY02 by rural-urban continuum code

PD patients are more rural in residence than both other VA patients and PM patients. RUCC codes used are from the US Department of Agriculture - Economic Research Service web site.

Age distribution for patients by ICD code for those with 332.0 (PD), 332.1 (PM) and those with both codes. More PD patients are in the older age groups.

LIMITATIONS: This is a cross-sectional study. ICD codes were used as a proxy for diagnosis. Length of residence in a particular place is unknown. Patients' residence is their location during 2002. Very small county size, and thus a small denominator, can inflate the prevalence. The cut-off for display purposes was 25/1,000 and counties with <100 VA patients are labeled on the county map.

CONCLUSIONS: A substantial number of veterans with PD seek medical care through the VA health care system. Compared with PM patients, PD patients were more likely to be older and reside further from VA health care facilities. The combined use of national databases with GIS mapping software provides an estimate of the prevalence of PD at the county level within the VA health care system nationally. Regions with higher than expected concentrations of these patients can be further investigated for both research and patient care planning purposes.