

Geographic Differences in Use of Home Oxygen for Obstructive Lung Disease: A National Medicare Study

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Background

Supplemental oxygen significantly improves survival and quality of life in patients with severe obstructive lung disease (emphysema). It is also the most expensive equipment item that Medicare purchases (\$1.7 billion/year), and the Centers for Medicare & Medicaid Services (CMS) has reduced payment for supplemental oxygen to control costs.

Purpose

To assess geographic variation in oxygen supplementation, both to help inform the management of home oxygen use on the part of CMS and to determine whether there are disparities in oxygen supplementation across geographic areas.

Study Design

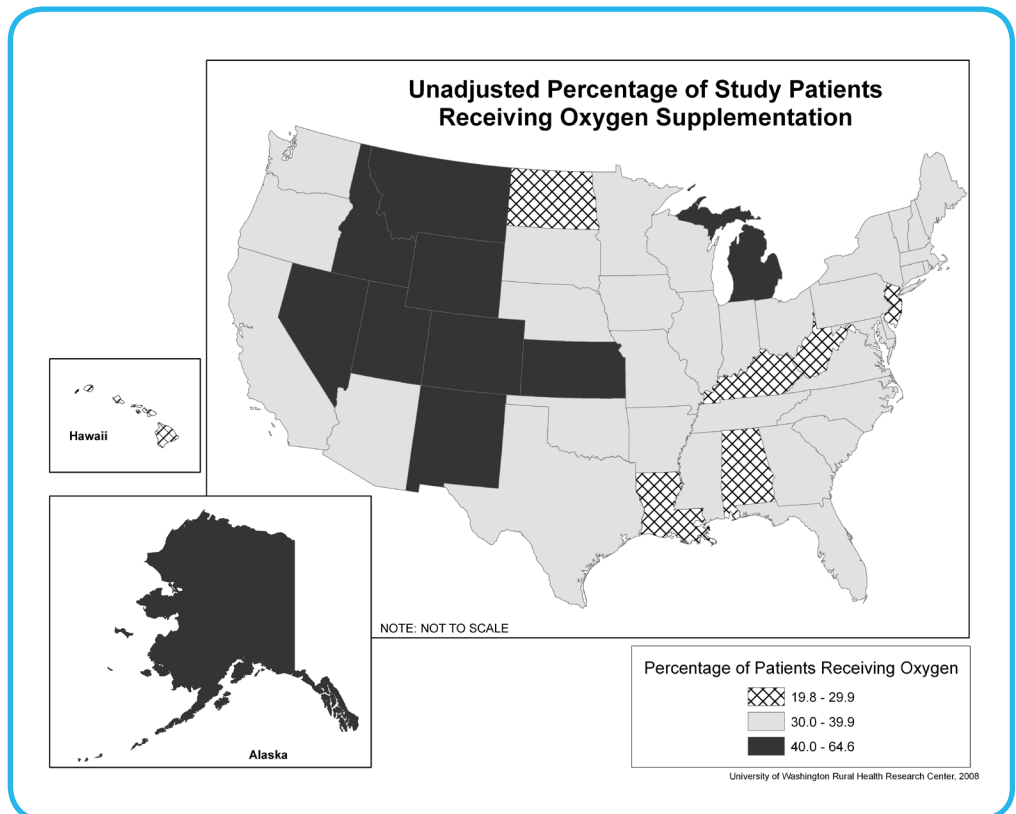
Retrospective cohort analysis of Durable Medical Equipment claims for a 20% random sample of Medicare patients hospitalized for obstructive lung disease in 1999 (N = 34,916) from 50 U.S. states and the District of Columbia and 305 hospital referral regions across the United States. Hospital referral regions are medical care referral regions across the United States defined by the *Dartmouth Atlas of Health Care*.¹ Rural-Urban Commuting Area Codes (RUCAs) linked to patients' home ZIP codes defined urban and rural residence locations.

Outcome Measures

Supplemental oxygen use rates within geographic regions at any time after hospitalization through 2000.

Major Findings

- One-third (33.7%) of the 34,916 patients used supplemental oxygen after hospital discharge.
- Living in rural areas was associated with higher unadjusted oxygen use rates than living in urban areas.
- There was an over four-fold difference in oxygen supplementation rates between the highest and lowest utilization states (see figure).



- There was an over six-fold difference in oxygen supplementation rates between the highest and lowest utilization hospital referral regions.
- After adjusting for patient sociodemographic, clinical, and environmental characteristics including elevation, high oxygen utilization areas included the state of Alaska, as well as the hospital referral regions of Redding, CA; Pueblo, CO; Lakeland, FL; Idaho Falls, ID; South Bend, IN; Traverse City, Saginaw, Flint, and Grand Rapids, MI; Cape Girardeau, MO; Amarillo, TX; Ogden, UT; Olympia, WA; and La Crosse, WI.
- After adjusting for the same patient characteristics, low oxygen utilization areas included the state of Louisiana and the District of Columbia, but no hospital referral regions.

Conclusions

There are significant geographic, state, and hospital referral region differences in supplemental oxygen use after hospitalization of patients with obstructive lung disease. Effective policies are needed to reduce health care disparities while maintaining fiscal responsibility.

Policy Implications

This study's finding of significant geographic variation in supplemental oxygen use after hospitalization of patients with obstructive lung disease requires further exploration. The Centers for Medicare & Medicaid Services, through their Quality Improvement Organizations and Durable Medical Equipment Regional Carriers (DMERCS), has the means to examine these issues in detail and institute changes that ensure both patient health and fiscal responsibility.

This study is published as:

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Reference

1. Wennberg J, Cooper M, Center for the Evaluative Clinical Sciences Staff. *The Dartmouth Atlas of Health Care*. Hanover, NH: Center for the Evaluative Clinical Sciences, Dartmouth Medical School; 1998.