Assessing Risk for Loss of Rural Pharmacy Services

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Objectives

The objectives of this study were to:
1. Prospectively identify rural one-pharmacy communities most at risk for loss of medication access and pharmacist services.
2. Identify and characterize the number of rural patients potentially impacted by the closure of a community’s only pharmacy.

Methods

Survey Selection and Design

A list of rural one-pharmacy towns in the states of Arizona, Arkansas, Iowa, Maine, Minnesota, Mississippi, Montana, North Dakota, South Dakota, Virginia, and Wyoming were searched to identify non-urban communities with one community pharmacy.

Data Collection

Surveys assessing community dynamics, ownership characteristics, prescription revenue, workforce and rural health care delivery were sent to pharmacists-in-charge at each of the identified pharmacies in the states of Arizona, Arkansas, Iowa, Maine, Minnesota, Mississippi, Montana, North Dakota, South Dakota, Virginia, and Wyoming. A cover letter and survey was followed by a thank you/reminder postcard ten days later. A second cover letter and survey was sent non-respondents. The survey period was January through March 2006 for the state of MN and March through April 2008 for all other states.

Data Analysis

Survey data were input into a database for each community based on their primary owner’s responses. Responding communities were rank ordered by risk score and a quartile-analysis was completed. Descriptive statistics were also completed.

Service Area Mapping

Service area mapping for one pharmacy towns was completed based on half-way distance to the nearest pharmacy utilizing a road network developed from ESRI’s Streets (Figure 1). Service areas were compared to census block data to evaluate service area size and age-related characteristics of the service area (Figure 2).

Results

Survey Response Rate

Six surveys were returned undeliverable. A total of 286 responses (41.2%) were received. Response rates per various state ranged from 19.3% to 66.7%. Table 1 represents the quartile distribution of comparative risk scores. A higher comparative risk score indicates a community with a greater risk for loss of local access to pharmacy services.

Service Area Mapping Results

The combined service area population of the 695 pharmacies was nearly 4.7 million people. On average, each pharmacy serves a market area of 6,752 people. Collectively, the size of the rural service areas covered served a market area of 22.3 times greater than the census population of the communities where the pharmacy is located (range per state 15.0-44.6). The service areas of these pharmacies covered 26.4% of the state’s square mileage range per state of 23.3% to 72.7%. Nearly 1.4 million of the service area residents (29.3%) are over 50 years old. Nearly 650,000 people in the combined service areas are 65 years of age or older. Figures 3 and 4 display the service area maps for Iowa and Minnesota.

Conclusion/Implications

Most rural one-pharmacy communities are served by non-chain pharmacies with an aging owner workforce that desire to transition ownership within the next 6 years. These pharmacies have a lower volume that has limited possibilities for expansion and a high percentage of revenue for the pharmacy is generated in the prescription department. The impact to rural health care may extend beyond community pharmacy access as many rural communities also have primary care clinics, nursing homes, and hospitals served by pharmacies. Estimates of the number of people impacted by pharmacy closure in rural areas, particularly one pharmacies, may be largely skewed. The size of the service areas based off a road network analysis may provide a better estimate than a Euclidian buffer zone or simply population of the communities where the pharmacy is located. Greater populations, including a high percentage of older patients, may be impacted by potential closure based on half-way distance to the nearest pharmacy utilizing a road network developed from ESRI’s Streets. Mapping of service areas based off a road network analysis may provide a better estimate than Euclidian buffer zones or census populations of the communities where the pharmacy is located. The impact to rural health care may extend beyond community pharmacy access as many rural communities also have primary care clinics, nursing homes, and hospitals served by pharmacies. Estimates of the number of people impacted by pharmacy closure in rural areas, particularly one pharmacies, may be largely skewed. The size of the service areas based off a road network analysis may provide a better estimate than a Euclidian buffer zone or simply population of the communities where the pharmacy is located. Greater populations, including a high percentage of older patients, may be impacted by potential closure based on half-way distance to the nearest pharmacy utilizing a road network developed from ESRI’s Streets. Mapping of service areas based off a road network analysis may provide a better estimate than Euclidian buffer zones or census populations of the communities where the pharmacy is located.