Improving Access to Urologic Care for Rural Populations Through Outreach Clinics

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OBJECTIVE To determine the effect of outreach clinics on access to urologic care in a state with a large rural population. This is especially pertinent given the predicted shortage of urologists over the next decade and the trend toward practice in urban area.

METHODS We analyzed provider level data from urologic practices within the state of Iowa using information from 2 publicly available sources: (1) the Office of Statewide (Iowa) Clinical Education Programs, which collects detailed information on visiting consultant urologists (VCU), and (2) the Iowa Physician Information System, which tracks demographic and professional data on all active physicians in Iowa. Factors analyzed included percent of counties and Iowans served by urologists and travel distances/times for patients and physicians.

RESULTS Currently, 57% of Iowans are within 30 minutes of a urologist's primary office, increasing to 84% with VCU outreach clinics. Fifty-five urologists, including 40 of 69 (58%) of Iowa-based urologists, perform outreach within Iowa, accounting for 198 clinic days and 20,400 miles of travel per month.

CONCLUSION Within Iowa, the lack of rural urologists has been mitigated, in part, by an extensive VCU network. However, improved access has required significant effort from urologists in both time and miles traveled. This study is the first to show how a rural state can effectively use physician outreach clinics to provide specialized urologic care to underserved, rural communities. UROLOGY 82: 1272–1276, 2013. © 2013 Elsevier Inc.

The growing shortage of urologists within the United States has become an important workforce topic in recent years. Multiple reports have projected significant workforce shortages as the supply of urologists per capita continues to decrease.[1,2] The aging workforce, combined with modest increases in the number of trainees graduating from residency, has led to a decline in the ratio of urologists per 100,000 in population.[2] The ratio, as of 2009, sat at 3.18 urologists per 100,000 in population, the lowest level since 1981.[3]

Nowhere is the shortage of urologists felt more than in states with large rural populations. Previous reports indicate that most new urologists are attracted to larger, urban-based groups, resulting in a perceived decrease in access and longer travel times for rural urologic patients.[4] Urologists are already ranked as the second oldest medical specialty, with an average age of 52.5 years, and within rural areas this trend is even more pronounced, with an average age of 54.7 years.[2] Given these national trends, many rural communities are at risk for further reduced access to care. Limited local access might have significant medical consequences, as previous studies have demonstrated that an increase in urologist density (urologists per 100,000 population) is proportional to improved outcomes.[5,6]

Within the US, the percentage of the population living in rural areas is decreasing, with approximately 16% of the population living in areas defined as rural.[7] However, in Iowa, this proportion remains relatively high, at nearly 36%,[7] making Iowa an ideal state to study current workforce strategies for rural populations. Nationally, outreach clinics have become an increasingly common way to combat lack of access to medical care[8-10] and expand the practice bases of participating specialists. Within Iowa, visiting consultant urologists (VCU) have been used to extend services to a large number of rural communities. However, to date the effect of this strategy on access to urologic care has not been described.

Our primary objective was to describe the effects that VCUs have had on access to urologic care in our largely rural state, with the hypothesis that the shortage of rural urologists within Iowa is being effectively mitigated by a large VCU presence. A secondary objective was to measure the impact, in terms of total days away from their primary practice and travel time that VCU care has made on the urologists themselves. In addition, we examine the

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hypothesis that physician age, years in practice, and/or the location of medical education or training influences the likelihood of participation in outreach.

MATERIALS AND METHODS

Our analyses use data from the Iowa Physician Information System (IPIS), a state-wide registry of all licensed physicians in Iowa, which is continuously updated by combining multiple state medical databases and with a continuous telephone census of all work places employing health professionals in the state of Iowa. The IPIS tracks the practice locations of physicians, including the locations and frequencies of visiting consulting clinic sites. With these data, we can reliably identify the counties and populations within the state that are served by resident urologists, served by VCUs or not served. The IPIS data reported here come from the 2012 Annual Report on Iowa's Visiting Medical Consultant Activity compiled by the Office of Statewide Clinical Education Programs at the Carver College of Medicine (University of Iowa).

The US Census Bureau city data were used to generate the centroid (latitude and longitude) location of VCU primary practice sites and urology outreach clinic locations. The 2010 US Census data were used to generate the centroid for our patient populations and the population densities within the state. Driving distances between census tract locations, primary practice locations, or outreach clinic locations were computed using MPMileCharter and Microsoft MapPoint with representative centroid data.

Outreach sites were coded as rural or urban using the rural-urban commuting area codes (RUCA) data from 2000.[11] In short, there are 30 different RUCA designations, and we aggregated the census tracts into 4 main categories: Urban areas (RUCA codes = 1.0, 1.1, 2.0, 2.1, 2.2, 3.0, 4.1, 5.1, 7.1, 8.1, 10.1), large rural city (RUCA = 4.0, 5.0, 6.0), small rural town (RUCA = 7.0, 7.2, 7.3, 7.4, 8.0, 8.2, 8.3, 8.4, 9.0, 9.1, 9.2), and isolated rural town (RUCA = 10.0, 10.2, 10.3, 10.4, 10.5).

Analysis of the likelihood of VCU participation by age, location of medical school, location of residency training, and years in practice were analyzed using χ^2 analyses and t-testing with significance designated as a P value of $<.05$.

RESULTS

With a 2010 population of 3.04 million and 69 practicing urologists, Iowa has a ratio of 1 urologist per 44,058 residents. Currently, no rural county in Iowa has a resident urologist. However, 13 of 21 (62%) of rural counties have a VCU at least once per month. In Iowa, 57% of the population is within a 30-minute drive of a urologist's primary office, increasing to 84% when VCUs are considered (Fig. 1). When driving times are increased to 60 minutes, access to a primary or VCU location increases to >99%.

There were 55 urologists who participated in outreach clinics within Iowa, including 40 of 69 (65%) of Iowa urologists (Table 1) and 15 urologists from 3 neighboring states (Wisconsin [n = 2], South Dakota [n = 5], and Nebraska [n = 8]). Figure 2 shows the geographic distribution of primary practice and outreach locations for all VCUs in Iowa. A total of 198 aggregate VCU clinics are

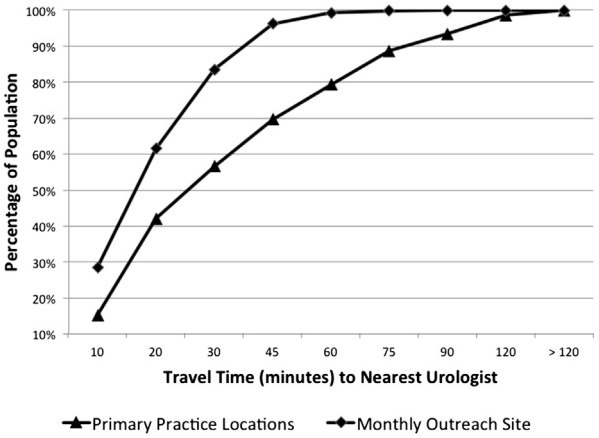

Figure 1. Impact of visiting consultant clinics on travel time to nearest urologist within Iowa (2012).

Table 1. Descriptive statistics about urology visiting consultant clinics in Iowa (2012)

Visiting Clinical Urologist Characteristics	N (range)
Location of participating urology groups	
Iowa	17
Nebraska	4
South Dakota	2
Wisconsin	2
Distribution of visit frequency	
1 visit per mo	21
2-3 visits per mo	42
4 or more visits per mo	19
Total number of visit per mo	198
Average visits per month per provider	3.6 (range, 1-14)
Distribution of visit days	
Urban area	2
Large rural city	14
Small rural town	68
Isolated rural area	17
Distances (1 way) to outreach sites, miles	
<30	12
30-39	17
40-49	14
50-59	17
60-69	7
70+	15

conducted in the state each month at a total of 74 unique locations. VCUs originating in Iowa accounted for 133 visits per month at 56 locations, whereas non-Iowa VCUs conducted the remaining 65 at 18 locations. Each VCU averaged 3.6 ± 2.8 days (range, 1-14) of care per month.

Of the 198 clinic days per month, only 2% were offered in locations considered urban (Table 1). Most clinic days (68%) were held in small rural towns, followed by isolated rural areas with 17% and large rural cities with 14%.

The average distance traveled by VCUs per visit was 103 miles (median = 97.1), accounting for 20,400 total miles of travel by VCUs each month. Non-Iowa VCUs traveled slightly farther on average per site than Iowa VCUs (118.8 ± 37 miles vs 95.7 ± 47 miles; $P = .03$).