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RESEARCH

Trends in Rural Health Clinics and needs during U.S. health care reform

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Aim: Rural Health Clinics (RHCs) are primary care clinics certified through Medicare and Medicaid to provide health care to the medically underserved in rural areas of the United States. The purpose of this paper is to describe how the characteristics of RHCs have either changed or remained stable over a 10-year period in the past: from the late 1990s to 2007. In addition, it is also to describe some of the outstanding needs of RHCs as they navigate the transitions of U.S. health care reform. **Methods:** Using a panel of RHCs continuously in existence from 2006 through 2007, we calculated and compared statistics with corresponding statistics from the literature. We described the geographic distribution of RHCs, demographics of their counties of location, and characteristics of RHC structure and staffing. We also explored the implications of the recently enacted health reform law (the Patient Protection and Affordable Care Act or ACA) for RHCs, and the improvements that RHCs need as it is implemented. **Findings:** By the end of the study period, the highest percentages of RHCs were in the South and Midwest, the percentage of RHCs in the West had grown, and that in the South had declined. RHCs served counties with increasing proportions of individuals below poverty and Hispanics/Latinos. The percentage of independent clinics had grown, as had the percentage of for-profit clinics. Finally, the percentage of nurse practitioner full-time equivalents had grown as a proportion of the total for three providers. **Conclusions:** In investigating the performance of RHCs, many managerial and operational factors are not well understood. It is imperative that RHCs gather the information that could help them maximize the elements of their performance that would keep them financially stable. In addition, a broader awareness of the unique challenges that RHCs face in this era of health care reform is needed.

Key words: primary care; rural health care delivery; Rural Health Clinics

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Background

The nearly 60 000 000 rural residents of the United States pose unique challenges to its rural health care providers. Rural populations are generally older and poorer than urban populations, and have higher rates of adult and childhood obesity, hypertension (National Rural Health Association, 2008), chronic diseases such as diabetes and congestive heart failure, and certain types of cancer (U.S. National Library of Medicine and National Institutes of Health, 2008).

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One vital component of the rural health care safety net is the Rural Health Clinic (RHC). RHCs are primary care clinics that provide health care to the medically underserved in the rural areas of the United States. They are certified by two U.S. government programs: Medicare (a health insurance program for older adults and certain disabled individuals) and Medicaid (which provides for the indigent). During the past 10 years, the number of clinics certified as RHCs throughout the country has increased 12-fold – from 314 RHCs at the end of 1990 (Gale and Coburn, 2003) to 3846 in 2011 (U.S. Department of Health and Human Services, Centers for Medicare and Medicaid Services (CMS), 2012). By 2002, Medicare and Medicaid payments for RHC services had exceeded $630 million (U.S. Department of Health and Human Services, Office of Inspector General, 2005). Like other rural health care providers, RHCs must meet the highly complex health care needs of their patients while also struggling to attract and retain qualified staff and survive financially.

Aim

The purpose of this paper is to describe how the characteristics of RHCs have either changed or remained stable over a 10-year period in the past: from the late 1990s to 2007. It also describes some of the outstanding needs of RHCs as they navigate the transitions of health care reform. We describe the geographic distribution of RHCs, the demographics of the counties in which they are located, and the characteristics of RHC structure and staffing. The statistics compiled by us describing a panel of RHCs continuously in existence from 2006 through 2007 are compared with those for the time period 1999–2000, based on our own calculations and statistics from the literature. The intent of our analysis is to provide background for policymakers at a time of rapid expansion and Medicare spending for RHCs.

The following *research questions* are addressed:

1) What are the trends for RHCs regarding communities served and geographic distribution?
2) What are the trends for RHCs regarding classification, control, and staffing?
3) What are the implications of the trends for RHCs?

Methods

Data sources

The study population consisted of all RHCs operating during 2006 and 2007 as reported in the CMS Online Survey, Certification and Reporting (OSCAR) database (U.S. Department of Health and Human Services, CMS, 2008a). Sources of demographic data describing the counties in which RHCs are located were the Area Resource File Access System (Bureau of Health Professions, 2007) and the U.S. Census Bureau (2009; 2010). The sources of data on operational characteristics were a survey distributed through mail to all RHCs existing in 2007 (Ortiz *et al*., 2011), and the Medicare Cost Report (U.S. Department of Health and Human Services, CMS, 2007; 2008b).

Methods

From the study population, we developed a study panel consisting of all RHCs continuously in operation during 2006 and 2007. The demographic and operational data were merged to form two data sets: one for the entire study panel and another for the 2009 survey data (Ortiz *et al*., 2011). Descriptive statistics were then calculated to describe three aspects of RHCs: demographics of RHC service communities, RHC geographic distribution, and RHC operational characteristics. Calculations were performed using SPSS version 17 software (SPSS, 2008) and SAS version 9.1 (SAS Institute Inc., 2007). Demographic data for the study panel were compared with those for the United States overall in 2007 as obtained from the U.S. Census Bureau (2009; 2010). In addition, 2007 demographic data for the counties of location of the study panel RHCs were compared with those for 2000. Finally, the geographic distribution and operational characteristics of the study panel RHCs were compared with those of RHCs of the late 1990s as described in Gale and Coburn (2003).

Findings

Demographics of the service community and geographic distribution

The study panel was composed of 3565 clinics. The mean number of years that these clinics had been Medicare certified as RHCs was 8.8.

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The study panel clinics were categorized by location into four regions according to the U.S. Census Bureau designations. Almost identical percentages were in the Midwest (39.4%) and South (39.7%); 17.5% were in the West; and 3.3% were in the Northeast. These statistics indicate that by 2007, the percentage of RHCs located in the West had grown, whereas the percentage in the South had declined. The percentages in the Midwest and Northeast had remained relatively stable.

Table 1 lists the statistics of 2007 for several demographic characteristics of the counties where the study panel RHCs were located, and the corresponding statistics for the United States as a whole (U.S. Census Bureau, 2009; 2010). The demographic characteristics indicated that although RHCs served very diverse populations depending on their locations, compared with the United States overall, service communities of the RHCs were more vulnerable to poor health. The counties where RHCs were located had median household incomes 13% lower than the U.S. median, a 10% higher proportion of older adults and elderly, a 10% higher proportion of persons below the poverty level, and 13% higher death rates.

Table 2 compares the demographic statistics of the study counties for 2 years: 2000 and 2007. During this time period, the following demographic characteristics remained essentially stable: the percentage of individuals over the age of 65 (13.6% in 2000 compared with 13.8% in 2007); the percentage of the population that was

Table 1 Community characteristics, 2007 panel RHC counties versus United States overall

Community characteristics	Mean (%)		Comparison with United States
	Panel RHC counties	United States overall	
Over age 65 years	13.8	12.6	10% higher
Individuals below poverty level	14.3	13.0	10% higher
Female	50.4	50.7	1% lower
Death rate	0.9	0.8	13% higher
Hispanic/Latino	14.8	15.1	2% lower
Black/African American	9.4	12.8	27% lower
	Median		
Median household income[1]	$43 250	$49 977	13% lower

RHC = Rural Health Clinic; ARF = Area Resource File.
Bureau of Health Professions, ARF Access System (2007).
[1] Calculated as median of median household income.

Table 2 Community characteristics, 2000 versus 2007 panel RHC counties

Community characteristics	Mean (%)		Comparison with 2000
	2000	2007	
Over age 65 years	13.6	13.8	1.5% higher
Individuals below poverty level	13.2	14.3	8.3% higher
Female	50.6	50.4	0.4% lower
Death rate	0.9	0.9	No difference
Hispanic/Latino	12.0	14.8	23.3% higher
Black/African American	9.1	9.4	3.3% higher
	Median		
Median household income[1]	$36 806	$43 250	17.5% higher

RHC = Rural Health Clinic; ARF = Area Resource File.
Bureau of Health Professions, ARF Access System (2007).
[1] Calculated as median of median household income.

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female (50.6% in 2000 compared with 50.4% in 2007); the death rate (0.9% in both 2000 and 2007); and the percentage that was Black/African American (9.1% in 2000 compared with 9.4% in 2007). However, the number of individuals below poverty level grew in the study counties from 13.2% in 2000 to 14.3% in 2007. In addition, the percentage of the population served that was Hispanic/Latino grew from 12% in 2000 to 14.8% in 2007.

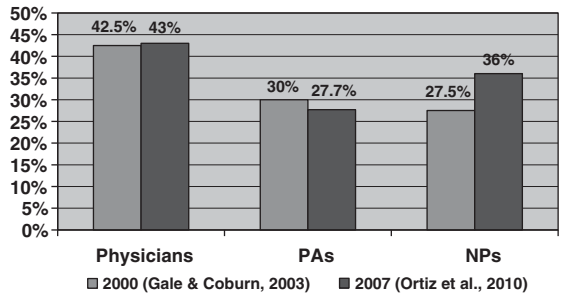

Figure 1 Staffing: relative proportion of Physicians, Physician Assistants (PAs), and Nurse Practitioners (NPs)

Operational characteristics of RHCs

Independent and provider-based RHCs

RHCs are of two classifications: independent (generally free-standing) and provider-based (operated by hospitals, home health agencies, or nursing homes). RHCs have distinct reimbursement mechanisms depending, in part, on these classifications. Provider-based RHCs that are based in hospitals with fewer than 50 beds are not subject to the per-visit payment limit that applies to other RHCs (U.S. Department of Health and Human Services, CMS, 2009). The percentage of independent RHCs in the national total grew during the study period, from ~52% in 2000 (Gale and Coburn, 2003) to nearly 58% by 2007.

Control or corporate structure

RHCs may be categorized into one of the three broad categories of control or corporate structure: for-profit, non-profit, and government-controlled. In 2007, most RHCs of the study panel (46%) were for-profit, compared with 42.2% in 1999. Thirty-eight percent were non-profit, and 16.1% were government controlled (compared with 41.9% and 15.9%, respectively, for 1999). Thus, by 2007, the percentage of for-profit, corporate-controlled RHCs had grown, and that of non-profit, corporate-controlled RHCs had declined.

Staffing

For the study panel, the total number of employees ranged from 0.04 to 10 full-time equivalents (FTEs), with a mean of 2.35 FTEs. Physicians, physician assistants (PAs), and nurse practitioners (NPs) make up most of RHC clinical staff, although some clinics may employ nurse midwives and other clinicians. We calculated the relative proportions of three categories of providers – physicians, PAs, and NPs – for 2007 using the study panel data, and for 2000 using the statistics reported in the findings from a national study of RHCs (Gale and Coburn, 2003; Figure 1). The biggest change was in the percentage of NPs. In 2000, NPs made up ~27.5% of the total ($n = 303$), whereas by 2007, they were 36% of the total ($n = 1336$). PAs made up 30% of the total in 2000 ($n = 305$) and ~27.7% of the total in 2007 ($n = 1336$). The percentages of physicians remained about the same at 42.5% in 2000 ($n = 503$) and 43% in 2007 ($n = 1336$).

In summary, by the end of the study period, the highest percentage of RHCs were in the South and Midwest (with each having ~40% of the total), the percentage of RHCs in the West had grown, whereas the percentage in the South had declined. RHCs served counties with increasing proportions of individuals below poverty and Hispanics/Latinos. The percentage of independent clinics had grown, as had the percentage of for-profit clinics. Finally, NP, FTEs had grown as a proportion of the total of three providers: NPs, PAs, and physicians.

Study limitations

Many of the descriptive statistics of the current study were compared with data collected from Gale and Coburn's (2003) survey conducted in 2000. Given the limitations inherent in self-reported data, those may not represent the entire population of RHCs for 2000. However, those data are the most complete descriptors of the characteristics and operations of RHCs for the beginning of the study period (late 1990s).

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Discussion

Implications of trends for RHC services and human resources during U.S. health care reform

The trends over the study period have several implications for the delivery of services, staffing, and developing personnel in RHCs during health care reform. Although the trends we have identified will affect RHCs to varying degrees depending on their geographic location, the needs of RHCs as a whole to effectively serve rural populations are many and interrelated as they progress into the next decade.

Serving older, impoverished, and Hispanic/Latino patient populations

The study results indicated that RHCs continued to serve counties with higher proportions of older adults as compared with the United States overall, although the percentage of persons over 65 remained stable over the study period. The health disparities between rural and urban residents are well documented for many health conditions, including diabetes, heart disease, and other chronic diseases (Bennett *et al*., 2008). Older rural adults are particularly vulnerable to these chronic diseases and other conditions associated with aging. Financial and geographic barriers often prevent them from accessing preventive care and treatment, or social and recreational services such as homemaker services, counseling services, and senior activities.

The study results also indicated that RHCs served counties with increasing proportions of individuals below poverty. Poverty has been described as a 'fundamental cause' of disease (Link and Phelan, 1995). Rural residents with low income and education levels are less likely to use preventive services (Shenson *et al*., 2007).

One provision of the recently enacted U.S. health care reform legislation – the 2010 Patient Protection and Affordable Care Act (ACA) – is an expansion of individuals who are eligible for Medicaid. Beginning 2014, states have the option of expanding Medicaid eligibility to individuals with annual incomes of 133% of the national poverty level or less. Thus, for many states, the high numbers of impoverished individuals in communities served by RHCs, coupled with the expansion of Medicaid eligibility under the ACA, are likely to mean an increased demand for RHC services in the near future.

Finally, one ethic group is making more of a presence in the communities served by RHCs: the Hispanic/Latino sector. Although a number of factors affect the health status of rural Latinos, language barriers, cultural barriers, and lack of health insurance are common (Sherrill *et al*., 2005). These factors have contributed to Hispanics/Latinos having the largest percentage of the total reported tuberculosis cases in the United States, and a higher overall prevalence rate for human immunodeficiency virus/acquired immunodeficiency syndrome (HIV/AIDS) and some sexually transmitted diseases as compared with whites (Centers for Disease Control and Prevention, 2012).

Greater proportions of independent and for-profit RHCs

In addition to the changes in the communities served by RHCs, we observed some change in the organizational structure of RHCs. During the study period, the percentage of independent clinics grew as did those that were for-profit. The impact of these factors on RHC performance calls for further analyses in the coming years. A previous longitudinal study of the variability in RHC performance found that independent and provider-based clinics respond differently to type of control and demographic factors. Independent clinics under for-profit control were associated with higher efficiency (Ortiz and Wan, 2012).

Greater proportion of NPs

During the study period, the proportion of NPs relative to physicians and PAs grew by almost 10%. Increasingly, NPs are filling clinical and administrative positions in RHCs throughout the United States. Their impact on RHC performance is another trend to monitor and analyze. A recent study examined the relative contribution of NPs (as measured in combination with other organizational and community variables) to the productivity of RHCs, finding a positive relationship between NP FTEs and productivity, albeit a small effect (Ortiz *et al*., 2010).

Human resource needs

In order to continue to provide high quality care for older and increasingly impoverished

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populations, as well as growing numbers of Hispanic/Latinos, RHCs must be agile and creative in developing their human resources. Workforce shortages are a persistent problem affecting RHCs and other rural health care providers. To address the workforce shortage problems, the ACA has developed several approaches that may benefit RHCs over time. These include new organizations for workforce planning; supporting existing organizations involved in health workforce recruitment and development; and providing for grants, loan repayment programs, and other mechanisms for education and training.

As rural areas become more ethnically diverse, there is an increasing need for RHCs to develop culturally competent personnel in order to best serve the needs of their respective communities. For example, Hispanic/Latino immigrants to the United States often approach health and health care through a lens of religious and folk beliefs that may be foreign to the majority of rural residents. Approaches to health education and treatment must be flexible to accommodate the perspectives of Hispanic/Latino and other minority groups.

Information technology infrastructure and changes in organizational structure

The expansion of health information technology (HIT) infrastructure in rural areas is essential if RHCs are to meet nationally accepted standards of quality. Developing RHC services requires ongoing assessment of community health needs. RHC providers need more ready access to information and developments in disease prevalence and incidence, environmental health, and other population health issues. Comparisons by region (eg, U.S. Department of Health and Human Services or U.S. Census Bureau region) of the incidence of chronic illnesses or conditions such as diabetes will give insight for enhancing RHC services delivery.

Many RHCs are exploring new models of health care delivery, such as the Patient-Centered Medical Home and the Accountable Care Organization. These feature patient-centered approaches, coordinated care, and physician-led teams (or, in the case of many RHCs, NP- or PA-led teams). Well-coordinated care and outcome tracking is largely dependent on a sound HIT infrastructure. To derive the benefits of HIT, RHC personnel must be trained to appreciate, operate, and gain information from the technology. Programs such as the Broadband Initiatives Program and the National Telecommunications and Information Administration Broadband Technology Opportunities Program are steps in the right direction for establishing a broadband infrastructure that would support webinars and other distance learning methods and information exchanges.

Implications for future research

The trends in RHCs and the communities they serve, as well as the changes and expectations brought on by the ACA require ongoing analyses and tracking of RHC performance. To optimize RHC performance, we must first identify their best practices in the highly diverse financial, demographic, and political conditions that exist throughout the United States. A multiyear analytical approach that accounts for the complexity of the U.S. health care environment is recommended for future research.

Conclusions

This study examined how the characteristics of RHCs have changed or remained stable over a 10-year period – from the late 1990s to 2007. It also described some of the greatest needs of RHCs as they transition under U.S. health care reform.

There was a 12-fold increase in the number of RHCs throughout the United States during the nearly 20-year period ending in 2007. Most of that growth appears to have taken place in the West and among independent clinics. RHCs served counties with large percentages of older adults and increasing proportions of individuals below poverty and Hispanics/Latinos. For-profit, corporate-controlled clinics increased relative to non-profit and government-controlled clinics. Finally, NP FTEs grew as a proportion of the total of three providers: NPs, PAs, and physicians.

RHCs continue to meet the needs of the medically underserved in rural areas and to mitigate the disparities between the health status of rural and urban populations. As RHCs progress in the new millennia, important questions about accountability and sustainability remain unanswered. RHCs face financial, operational, and access challenges along with their high rate of growth and rising costs.

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In investigating the performance of RHCs, many managerial and operational factors are not well understood. It is imperative that RHCs gather the information that could help them maximize the elements of their performance that would keep them financially stable. Optimal performance can be achieved only with a sound technological and informational infrastructure and clear performance criteria that incorporate the regional variations in patients. In addition, a broader awareness is needed in the healthcare field of the unique challenges that RHCs and other rural health care providers face in this era of health care reform.

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