

## **The Main Street Pharmacy: Becoming an Endangered Species**

**Andrew P. Traynor, Todd D. Sorensen & Tom Larson**

---

Ruralville is a peaceful, small town of 2,200 in rural Minnesota best known for the world famous homemade pie at The Corner Café. Folks come from miles around on a beautiful day for a slice of pie and coffee and to do some shopping at the local craft stores. Other than the occasional trips to larger nearby communities, the residents of Ruralville have little need to venture out of their community for their typical daily needs. The large constituency of rural elderly in this town are thankful for this situation as they need not venture far for their groceries, hardware supplies, church, social activities or health care.

The health care environment in Ruralville consists of a two-provider medical clinic attached to a 24-bed critical access hospital and 50-bed long-term care facility as part of a fairly new health care campus. On Main Street, between the Ruralville Hardware Store and First National Bank, Joe Johnson has owned and operated Ruralville Pharmacy for the past 40 years. Now 65 years old, Joe is looking forward to retiring to his cabin by the lake to enjoy some fishing, travel and time with his grandchildren. He has operated a good business and has been an integral part of the community in those 40 years.

Joe has served his patients and community well by providing much needed health information, education on medications, assistance with management of self-care issues, referral of patients to medical providers, drug information for medical providers, identification of problems with drug therapies, safe provision of medication distribution in his pharmacy, the hospital and the nursing home, participation in medication use committees, and community leadership in civic activities. These tasks have given Joe a very rewarding career, but over the years, Joe has had to keep up with the changes in technology and the need for an increasing diversity of medication inventory while profits have decreased

due to dwindling third-party reimbursement. Most recently, Medicare Part D has shifted many cash-paying customers to third-party coverage, decreasing Joe's profits to negligible percentages. Anticipating a significant drop in his business when the largest local employer changes its benefits to include a mail order pharmacy requirement at the beginning of the new year creates a bleak outlook on Joe's ability to transition ownership of his pharmacy. Many young pharmacists shadowed Joe prior to graduating from the University of Minnesota, but none have shown an interest in returning home to relieve him of his responsibilities.

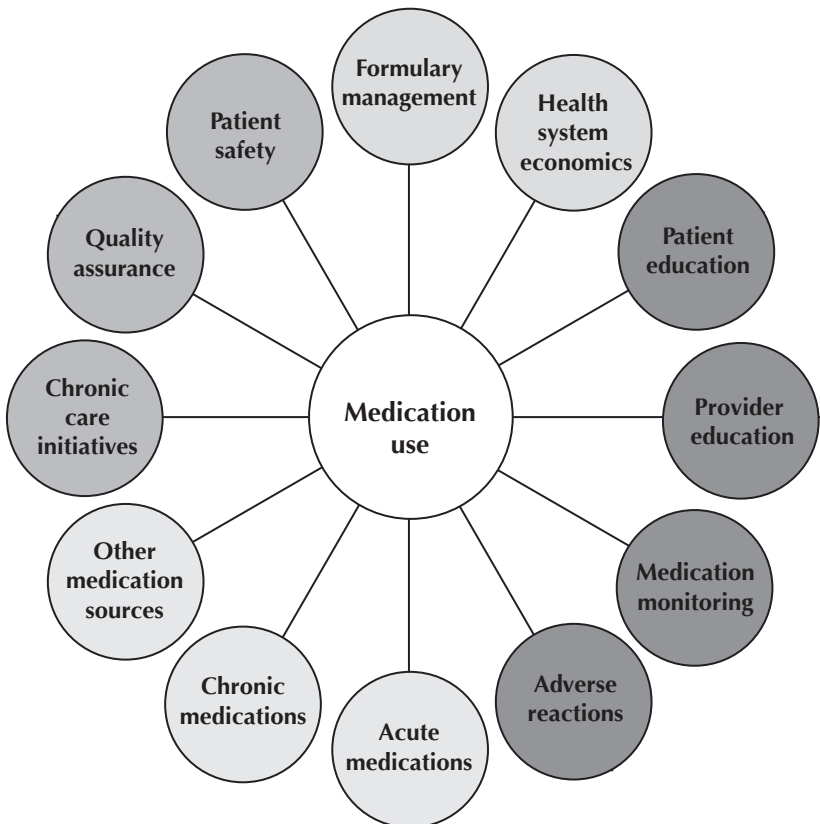
What will be the impact on Ruralville when Joe chooses retirement without transition of pharmacy ownership or services? Who will provide the services Joe offers to the community with the same quality? What are the implications to the hospital, nursing home and clinic when they lose the services Joe provides to them? What happens to the other Main Street businesses when patients are forced to visit neighboring communities for their medication needs?

While Ruralville is a fictitious Minnesota town, the situation facing it is very real and is increasingly common. Rural pharmacy practice operates in a fragile environment challenged by changes in the U.S. health care system, including increased competition from chain, mass-merchandise, and mail service pharmacies; changes in third-party reimbursement; and the increased application of costly technology. Specifically, reduced profitability, challenges in hiring staff pharmacists and obtaining assistance from relief pharmacists when needed, decreased personal and professional flexibility of a pharmacist's time, and decreased interest in rural pharmacy ownership continue to be barriers to the delivery of pharmacy services in rural areas (Epstein, 1996; Billow, Van Riper, Baer, Stover, 1991; Traynor, Sorensen, 2005). A significant change in any critical factor or the introduction of a new risk factor has the potential to result in the closure of a local pharmacy, which can create significant challenges for rural residents, resulting in increased travel distances to pharmacies and, in turn, lower prescription refill rates (Xiao, Sorofman, Manasse, 2000; Xiao, Sorofman, Manasse, 2000). In this article, we will describe the current situation of rural pharmacies in Minnesota, the factors impacting the delivery of pharmacy services in rural Minnesota, the future outlook for rural pharmacies in Minnesota and potential solutions to maintain these critical health care services.

## The Role of the Rural Pharmacist

The role of the rural pharmacist is multifaceted, and loss of this professional in the delivery of pharmacy services in rural communities has many implications. Pharmacists contribute many services to rural communities and residents beyond simply serving as a basic access point for medications. Figure 1 highlights the many roles and responsibilities of rural pharmacists managing medication use in a community. In addition, local access to pharmaceuticals and the knowledge of a pharmacist is a key part of the local health system, ensuring cost-effective medication use and the required provision of pharmacy services in hospitals and long-term care facilities (Casey, Klingner, Moscovice, 2002; Stratton, 2001). While rural pharmacists' roles may be assumed to be limited to retail pharmacy settings, a 2003 survey of one-pharmacy rural communities revealed that out of 33 rural communities with one

*Figure 1: Functions of the pharmacist in the Medication Use System.*

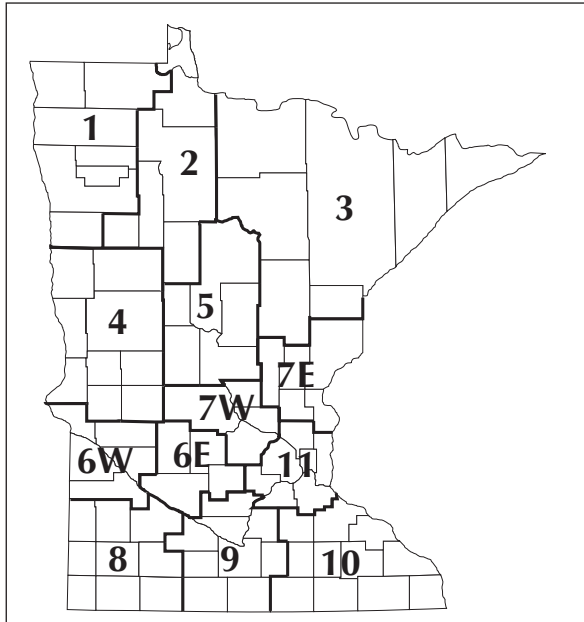


pharmacy and a small hospital, 11 community pharmacies were the source of hospital pharmacy staffing (Traynor, Sorensen, 2005). Every community has a system with applicable processes for addressing the distribution and use of medications in each of its health care settings. We refer to this system as the medication use system, and its effective management requires diligence on the part of someone with expertise of medication use and medication systems. Communities who are at risk for the loss of a local pharmacy must consider where this responsibility will fall if there is no local pharmacist present to participate in this system.

### Workforce Trends and Issues Currently Facing Rural Communities and Rural Pharmacists

*2005 Rural Pharmacist Workforce Review.* The Minnesota Health Department, Office of Rural Health and Primary Care, State Board of Pharmacy and University of Minnesota College of Pharmacy have collaborated to maintain licensure data and keep the public apprised of changes occurring within the pharmacy workforce. Data has been extracted from the Minnesota State Board of Pharmacy Pharmacist Licensure database and summarized by county, economic development region (Figure 2), and state.

*Figure 2: Minnesota Economic Development Regions.*



- Distribution of pharmacists: Over the past ten years, the number of pharmacists licensed to practice in Minnesota has risen by almost 1,200 pharmacists and continues to rise. There were 4,720 licensed pharmacists living in the state of Minnesota in 2005. Similarly, the number of active pharmacists per 10,000 Minnesota residents has increased recently, moving from 8.0 to 9.15 over the past ten years (Table 1).

The distribution of pharmacists in Minnesota is closely associated with population centers: the portion of licensed pharmacists living in the community is directly related to the size of the community's population. Approximately 58% of active pharmacists live within the seven-county metropolitan area (Region 11). The ratio of pharmacists per 10,000 residents ranges from 5.7 in Region 1 to 10.8 in Region 10. There is a wide disparity in the ratio of pharmacists to residents at the county level of analysis: Kittson, Pine, Waseca, Cass, Mahnommen and Lac Qui Parle counties all have ratios of less than 4 per 10,000 residents, while Olmsted County has a ratio of 20.8.

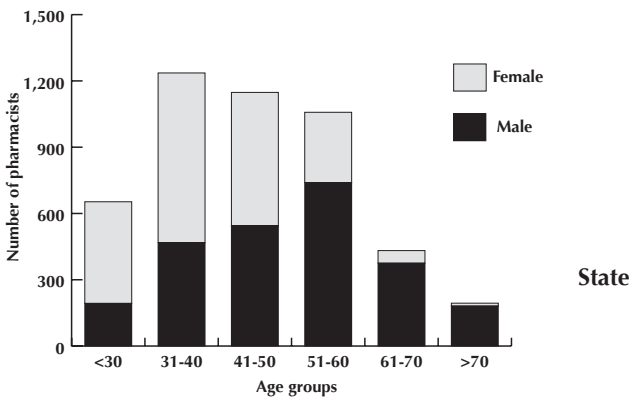
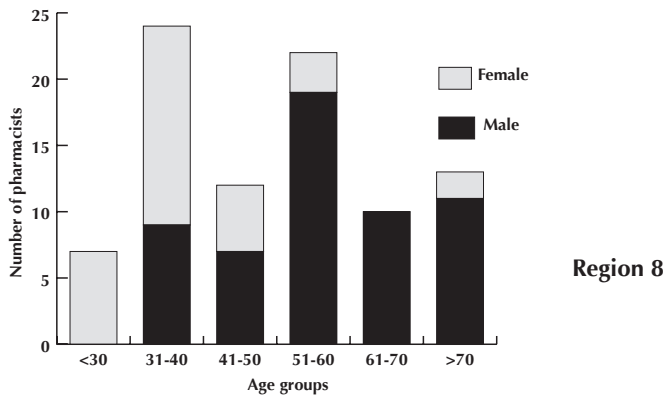
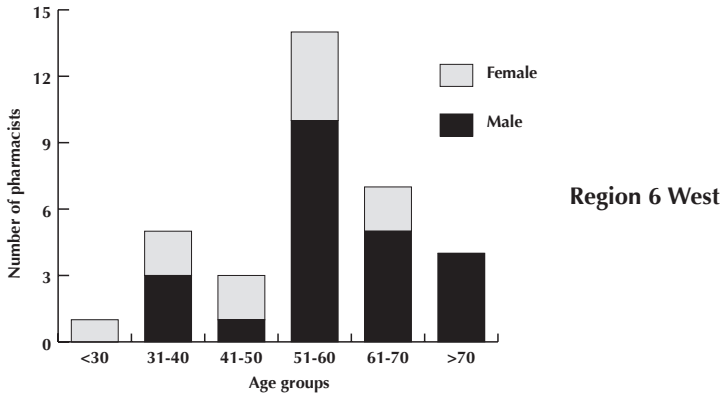
*Table 1: Minnesota pharmacists, selected regional demographic data, 2005.*

Region	% of state's pharmacists	Average age	Active pharmacists per 10,000 residents	% Male	% who are Tri-State graduates+	% holding a Doctor of Pharmacy degree
1	1.1%	54.1	5.7	66%	96%	4%
2	1.6%	48.7	9.1	65%	91%	16.2%
3	6.3%	49.3	9.1	63%	86%	17.7%
4	3.9%	49.5	8.6	60%	95%	16.6%
5	2.5%	50.3	7.4	65%	95%	14.0%
6 East	2.0%	48.8	8.0	60%	77%	18.8%
6 West	0.7%	55.6	6.9	65%	89%	8.8%
7 East	2.3%	46.8	7.1	57%	100%	22.4%
7 West	6.0%	43.8	8.1	54%	88%	30%
8	1.8%	51.1	7.1	65%	95%	12.8%
9	3.2%	50	6.6	66%	95%	13.3%
10	10.9%	45.3	10.8	60%	87%	23.6%
11	57.7%	44.8	9.7	47%	63%	31.3%

+ University of Minnesota, South Dakota State and North Dakota State graduates.

- **Average age:** Since 1995, the average age of pharmacists in Minnesota has risen steadily, from 42 years to 46.1 years in 2005. Thirty-six percent of pharmacists are over 50 years of age, while 4% are over 70. This cohort is balanced by the 40% who are under 40 years of age. Distribution by age across the state is also not uniform. Each region and county has a unique distribution that may be very different from that of the state as a whole. As an example, Figure 3 shows how age groupings differ between Region 6 West and Region 8. In general, the age distribution of Regions 10 and 11 are closest to that of the state. Regional differences in average age are modest, ranging from 43.8 years (Region 7 West) to 55.6 years (Region 6 West). The average age at the county level ranges from 40 in Dodge and Scott counties to 65 in Kittson County. The average age was over 60 in Big Stone, Sibley, Swift, Jackson, and Norman counties in 2005.
- **Gender:** Perhaps the greatest change in pharmacist demographics has occurred in the gender composition of the workforce. As recently as 1975, the proportion of female pharmacists was reported to be less than 20%, but by 2005, the proportion of women in the pharmacist work force had risen to 47%. Male pharmacists currently outnumber their female counterparts in all regions except Region 11 (seven-county metro), where men represent 47.2% of the work force. The proportion of males was greatest in Region 9 (66%) (Table 1).
- **Education:** Historically, the majority of pharmacists in Minnesota graduate from schools of pharmacy in Minnesota, North Dakota or South Dakota. In 2005, 50.5% of Minnesota pharmacists graduated from the University of Minnesota, 21.5% from North Dakota State University and 10% from South Dakota State University. Among those pharmacists younger than 30, a greater proportion have come from schools other than these Tri-State schools. Region 10 varies the furthest from the state average, where 38% of the pharmacists graduated from a non Tri-State school. Region 10 also leads in diversity of alma mater in the youngest age category, where only one-third of these pharmacists are from the Tri-State schools.
- **Licensed community pharmacies:** The number of licensed pharmacies in 2005 was slightly higher than in previous years, with a slightly greater number of chain-owned community pharmacies and a lower number of independently owned

Figure 3: 2005 age and gender distribution: Region 6 West, Region 8 and state.



pharmacies. While overall the number of chain-owned pharmacies outnumbered those independently owned, in rural areas independently owned pharmacies remain the predominant pharmacy type in the state's smallest rural communities. Pharmacists continue to be primarily employed by the community/retail pharmacies. Every county in Minnesota has at least one licensed community pharmacy. Lake of the Woods, Marshall, Red Lake, Mahnomen, Murray and Dodge counties have only one licensed community pharmacy each, while seven other counties have only two.

**Current Issues.** One of the most significant challenges facing rural communities is the closure of local pharmacies. While the closure of pharmacies is occurring in rural communities of all sizes, communities that host only one pharmacy face the greatest degree of risk since the closure of this one pharmacy would result in the loss of local access to a pharmacist and medications. In Minnesota, there are currently 126 communities that are served by only one pharmacy. The communities represent a population of 216,000 residents within their city limits. The population served by these pharmacies, however, is larger, considering the surrounding service areas (Traynor, Sorensen, 2005). From 1996 to 1999, there were 38 pharmacy closures in rural areas, nine of which resulted in a community no longer having a local pharmacy (Casey, Klingner, Moscovice, 2001). More recently, a review of pharmacy closures in 2005 revealed 29 closures in Minnesota, 12 of which were located in rural areas. As a result of these closures, two rural communities lost local access to a pharmacy. In addition, nine communities have become one-pharmacy communities since 2003.

Because independent pharmacy ownership is the predominant ownership type in the state's smallest rural communities, factors that challenge transition of ownership in rural communities increase risk for loss of access to pharmacy services. Currently, the number of rural pharmacy owners seeking to transition ownership of their businesses is notable. A recent survey of pharmacy owners in one-pharmacy communities showed that nearly 30% of owners were hoping to transition ownership within three years and more than 60% hoped to transition ownership within the next 10 years (Traynor, Sorensen, 2005). If these owners are unable to transition ownership, many communities may see the closure of their local pharmacy.

Unfortunately, there is reason to believe that ownership transition will be challenging. While many new pharmacy graduates appear to have an interest in living and working in rural



Minnesota communities, few have expressed an interest in pharmacy ownership. Nearly 63% of students responding to a survey on rural pharmacy issues indicated that they were giving serious consideration to practicing in a rural community with a population of less than 5,000. However, only 27% of respondents had given serious consideration to pharmacy ownership. Of the students expressing interest in rural pharmacy practice, most were interested in staff pharmacist positions, but not ownership. The respondents who indicated they were not giving serious consideration to pursuing full ownership of a community pharmacy ranked “responsibilities and time commitment” and “choice of lifestyle to maintain” as either being of moderate or great influence (Traynor, Sorenson 2005).

Additional evidence of the lack of young pharmacists moving into rural communities comes from the Lake Superior Rural Cancer Project, a multidisciplinary approach to test strategies for managing and improving cancer diagnosis in rural areas of Michigan, Minnesota, and Wisconsin. Reviewing the workforce demographics of health care practitioners in the areas encompassed by this project showed that only 6.4% of pharmacists had been in their positions five years or less, compared with 48% of nurses and 44% of physicians. Conversely, 40% of pharmacists had been in their current positions longer than 20 years (Gangness, 1997). The disconnect between the practice opportunities desired by young pharmacy practitioners and those that primarily exist in rural communities has contributed to this workforce disparity.

The ability to hire full- and part-time pharmacy staff is a continuing challenge for pharmacy owners and managers in rural communities. According to 2001 Minnesota workforce data, 84.6% of respondents reported great difficulty in hiring pharmacists (Hansen, Schommer, Larson, 2001). The challenges experienced by rural pharmacies in hiring staff and relief pharmacists result from many factors, including the rural pharmacy’s inability to offer competitive salaries and benefits compared with pharmacies in urban areas (Epstein, 1996). In addition, the variety of professional opportunities for the spouses or “significant others” of pharmacists are often limited. Compounding this problem is the high demand for pharmacists, which has steadily increased the salary and benefits offered to pharmacists regardless of the geographic area in which they practice (Pederson, Schommer, 2001). Decisions about where to practice pharmacy increasingly depend on personal and professional lifestyle choices. A 2002 Minnesota pharmacist vacancy survey revealed that 45% of all rural pharmacist positions had been vacant

more than 10 months, compared with only 25% of urban pharmacist vacancies (Gangeness, 1997). Furthermore, 22.5% of Minnesota pharmacists in rural counties were over age 55 in the late 1990s, compared to just 14.1% in urban counties at the same time (Larson, Uden, Hadsall; 1999).

***Impact of Medicare Part D.*** Medicare Part D has had a tremendous impact on both rural residents and rural pharmacists. For rural residents, this program has largely been a beneficial addition to Medicare. Prior to 2006, nearly one half of rural seniors lacked prescription medication coverage. The fact that rural residents are more dependent on medications due to a higher prevalence of chronic conditions (Gangeness, 1997) further adds to the positive impact of the program on these citizens. However, the implementation of Medicare Part D on January 1, 2006, marked a date of notable change for community pharmacies in the United States, particularly for rural pharmacists. Prior to this date, rural pharmacists were already facing numerous challenges such as those mentioned previously. The implementation of Medicare Part D created additional burdens unique to the delivery of pharmacy services in rural communities. The percentage of prescriptions moving from cash to being paid by less profitable third-party payers, such as prescription drug plans, is higher in rural areas than in urban areas (18% vs. 13%). For all pharmacies, this reduction in margin on prescriptions places a greater burden on non-medication related sales; however, independent pharmacies — which comprise 48% of rural pharmacies vs. 29% of urban nationally — are much more dependent on prescription medication sales revenue (93%) compared to chain stores (65%) (Fraher, Slifkin, Smith, Randolph, Rudolf, Homes, 2005). The result is that the ability to maintain a financially viable practice has become disproportionately more challenging in rural communities.

There is an irony with Medicare Part D when one considers that, for many rural citizens, a program that was intending to increase access to affordable medications may actually dramatically limit access due to its role in facilitating the closure of many rural pharmacies. With the disproportionately negative impact of Medicare Part D on rural pharmacies, we can only expect that the issue of pharmacy closures and the number of rural communities losing local access to local pharmacy services will escalate.

***The Broad Effects of Pharmacy Loss.*** It is important to note that the closure of pharmacies in rural communities has the potential to

affect the healthcare system dynamics in the community beyond medication use: it may also affect the community's economy. For example, if a rural pharmacy closes, use of the local primary care clinic may decrease as well, because of a lack of prescription access at the point where a physician's care is received. Use of pharmacies in neighboring towns may result in use of primary care clinics in the same neighboring town.

In addition, a study of the association between pharmacy closure and prescription drug use in Iowa Medicaid patients showed significantly fewer prescription claims for patients after their pharmacy closed compared to pre-closure utilization rates. Medicaid patients who experienced no change to their pharmacy access had more prescription claims, and this difference remained significant after controlling for patient demographics and health status (Xiao, Sorofman, Manasse, 2000). If all medications prescribed are necessary, those individuals living in a community that had its pharmacy close are likely receiving less-than-optimal treatment for their health conditions.

Finally, another implication of pharmacy closure is increased travel distance for patients. Analysis of pharmacy closure in Iowa also showed that Medicaid patients who experienced a pharmacy

**Figure 4:** Service comparison - presence of local pharmacist vs. remote operations (telepharmacy/mail order).

Activity	Local Pharmacist	Remote Service
Availability of acutely needed medications	Frequent/Always	Frequent
Availability of Chronic Medications	Frequent/Always	Frequent/Always
Assistance with self medication	Always	Sometimes
Provision of verbal medication education at time of receiving medication	Always	Sometimes
Local awareness of community medication use issues	Frequent	Rare
Regular collaboration with local medical providers	Frequent	Rare
Ability to recognize new medical problems and refer to medical providers	Always	Rare
Ability to prospectively recognize medication use problems in institutional settings and consistently contribute to broad medication use management	Always	Rare
Contribution to local community economy	Frequent	Sometimes

closure were subjected to greater travel distances compared to those patients whose pharmacies remained open (Xiao, Sorofman, Manasse, 2000). In Minnesota an assessment of “one-pharmacy” towns reported that on average, members of a community would travel 21.4 miles one way to a neighboring community to access medications if their local pharmacy closed (Traynor, Sorensen, 2005). While remote operations such as telepharmacy and mail order services may provide local access to some medications, Figure 4 highlights the typical differences in scope of services provided by local vs. remote pharmacy operations.

***Implications to Rural Main Streets.*** Looking beyond health care services, the economics of a rural community can be harmed if residents must visit neighboring communities for medication needs, potentially leading them to conduct other forms of business in the neighboring community as well. While multiple factors such as local tourism and service needs may impact local economies, preliminary research of the closure and anticipated closure of Main Street pharmacies in specific towns reveals that pharmacy closures may have a direct impact on local economies. Upon the closure of the pharmacy in one community studied, 75% of businesses surveyed agreed or strongly agreed that the community was spending less money in town. Businesses citing pharmacy closure specifically as affecting their businesses included restaurant and retail businesses (Harder, 2001). A survey of patients in a community where closure of a pharmacy could be a possibility revealed that they would conduct other forms of business in a community if they traveled there for pharmacy services. Respondents largely indicated that they would travel to a community where multiple retail needs could be met (Austin, 2005). Communities must consider the impact on local businesses and perceptions of community members related to conducting business in a community without pharmacy services when faced with the possibility of a pharmacy closure.

## **Educating the Next Generation of Rural Pharmacists**

So how do we work to facilitate an increased presence of young pharmacists in rural communities? One suggestion comes from research of physician education, which has revealed that students originally from rural areas and residents trained in rural areas are more likely to practice in rural areas. An example of this is the University of Minnesota Rural Physician Associate Program (RPAP). Established in 1971, RPAP is a program that allows third-year medical students to participate in a nine-month primary care

elective in rural Minnesota. Living and learning in rural Minnesota, over 1,000 medical students have participated in this program. Of the 641 RPAP alumni practicing in Minnesota, 64% are practicing in rural areas. Coupled with rural training that values generalism, community responsive practice and rural life, this type of medical training has been a recipe for improving the flow of medical practitioners to underserved areas (Rural Physician Associate Program Summary, 2004-2005).

A coordinated effort is required to expand the dissemination of new pharmacy practitioners to rural areas and to prevent the loss of pharmacy services in small rural communities. Partners in these efforts may include colleges of pharmacy, professional associations, regional Area Health Education Centers, state government, and individual communities and health systems. An example of these efforts is the plan developed by the University of Minnesota College of Pharmacy to expand the size of its classes to help address workforce demands in the state. The College expanded its pharmacy program to the University of Minnesota, Duluth campus, where approximately 50 student pharmacists are admitted each year (in addition to 105 students at its Twin Cities campus). Expanding the pharmacy program to Duluth has allowed the College to attract more individuals from Greater Minnesota. Approximately 50% of students currently admitted to the College's Duluth campus were originally from rural communities, compared to 25% of Twin Cities students. In addition, the College has worked to expand experiential education opportunities for student pharmacists and pharmacy residents in rural communities across the state. These efforts have resulted in more student pharmacists coming from rural communities, as well as creating opportunities for them to train in rural communities, and as a result we will see outcomes similar to the Rural Physician Associate Program and observe an increased number of young pharmacists choosing to practice in rural communities across the state.

### **Opportunities/Advancements**

In 2005, the Minnesota Legislature passed two provisions that have the potential to lessen the risk for loss of rural pharmacy services. A Rural Pharmacy Planning and Transition Grant Program, administered by the Office of Rural Health and Primary Care, was created to provide funding for communities seeking to plan and/or implement steps to maintain access to medications and the knowledge of a pharmacist. A total of \$180,000 is available each year for grant requests not exceeding \$50,000 (Minnesota Office of Rural Health and Primary Care website, 2006).

The second provision was expansion of the Office of Rural Health and Primary Care's rural pharmacy loan forgiveness program to include pharmacists practicing in rural areas. Prior to 2004, pharmacists were not eligible for this program. Now, graduating students, pharmacy residents or licensed pharmacists may currently receive approximately \$13,500 of education loan forgiveness for a three-year consecutive service commitment to rural areas (Minnesota Office of Rural Health and Primary Care Website, 2006).

Another opportunity for maintaining access to pharmacists and pharmacy services in rural communities may come in the way of developing service networks. Currently, most pharmacies in small rural communities conduct business as independent entities and have no significant source of support for activities related to staff recruitment, managing purchasing contracts, business consulting services, etc. A project was recently completed exploring the feasibility of creating a service network to support pharmacies and pharmacists in southwestern Minnesota. The project identified many opportunities where a network would create efficiencies and value-added benefits to existing pharmacy practices, within both community pharmacies and small rural hospitals. Work is under way to put into action this concept, which may serve as an important component in maintaining the viability of rural pharmacy practices in the future.

### **Proposed Solutions/Recommendations**

There are a number of ways community residents can support the resolution of issues challenging rural pharmacy practices, and by doing so, residents can help ensure the presence of pharmacists and pharmacy services in their local communities. A few of these opportunities are presented here:

- Most importantly, communities need to recognize that there is a risk for loss of local pharmacy services. They should take time to understand the issues creating this risk, then engage in dialogue among community leaders, pharmacists, health care administrators and policy makers to define and address solutions to these problems.
- Related to this, communities need to understand the role of the pharmacist and the delivery of pharmacy services in their communities. The role of the pharmacist and a local pharmacy extends well beyond serving as a basic access point for medications. Pharmacists contribute in many ways to creating

successful outcomes of medication therapy. The presence of pharmacy services in a local community is a key component of the broader health care delivery system, as well as the strength of the local economy.

- Rural residents should seek opportunities to engage in advocacy, particularly with state and federal legislators, concerning the impact of government programs that affect medication use and accessibility. One idea that has been suggested is creating a federal “critical access pharmacy” designation similar to the “critical access hospital” program, which helps rural health care facilities that don’t have the size and scope to operate successfully in today’s health care system.
- Communities and health care leaders should seek to partner with pharmacists to develop mechanisms that integrate pharmacists more fully into the rural community’s health care system. Isolation of pharmacy services to one site can contribute to a lack of interest on the part of new pharmacy graduates who otherwise would be interested in pursuing positions in rural communities. Collaborative approaches to care have frequently been shown to improve the outcomes of medication therapy. Interest in rural pharmacy practice is increased when student pharmacists are presented with a practice opportunity that integrates them in the rural health system, focusing on multiple pieces of the medication use process (Traynor, Sorenson 2005). When asked on a survey, more than twice as many Minnesota, North Dakota and South Dakota student pharmacists indicated that they would find opportunities such as this more appealing than traditional pharmacy practice opportunities (Traynor, Sorenson 2005). Prospective development of new practice opportunities in rural areas may be an effective answer for communities struggling to achieve transition of local pharmacy ownership.
- Community leaders should seek to benefit from the Rural Pharmacy Transition and Planning Grant program administered by the Minnesota Office of Rural Health and Primary Care, as well as leverage opportunities with other grant programs.
- Community leaders must consider developing innovative approaches to recruitment of pharmacists to rural communities, much in the way that is done with other professionals such as

physicians. The average individual graduating from pharmacy school has seven to eight years of university experience, and as the age of pharmacy graduates increases, they are more likely to have spouses or significant others that have or are seeking professional careers of their own. This strongly influences the choice of a community in which the family will choose to live and work. Additionally, opportunities for young pharmacists to gradually take over ownership of a rural independent community pharmacy are often limited, and therefore “junior partnership” programs should be developed (Traynor, Sorensen, 2005).

- Finally, rural community residents make choices on a daily basis that affect the viability of local pharmacy services and the presence of a pharmacist in their communities. Residents should consciously consider choices about where they obtain medications, such as through mail order and “big box” retailers in neighboring communities. Additionally, the choice of insurance or Medicare Part D plans affects local pharmacists and the availability of services. For example, several Medicare Part D plans include provisions in their medication benefit programs that pay pharmacists to help patients better manage their drug therapy. Rural seniors not only would personally benefit from choosing plans to include payment for this service, but the availability of this opportunity to local pharmacists creates a new revenue source that improves fiscal viability of the pharmacy practice.

## **Conclusion**

Rural pharmacy services are currently operating in a fragile environment, challenged by financial implications including costly technology use and unfavorable reimbursement mechanisms. Additionally, workforce issues in traditional rural pharmacy practice models impact the ability for current rural communities to recruit and maintain medication use experts who serve a variety of functions. Should rural residents lose access to medications, a “domino effect” may occur in rural communities resulting in further health care access and economic issues. Solutions must be explored that encourage partnerships among multiple stakeholders, focusing on community awareness and support, advocacy efforts, integration of multiple pharmacy aspects within rural health systems, potential funding for innovative programming, and innovative pharmacist recruitment to rural areas. Failure to achieve awareness of the issues or to explore multiple solutions collaboratively may result in future health care access issues in the very near future.



## References

- Austin, M. *The Local Pharmacy has Closed: Social and Economic Implications for Residents and Businesses* [pharm D IV thesis]. Minneapolis (MN): University of Minnesota; 2005 22 p.
- Billow JA, Van Riper GC, Baer LL, Stover RG. The crisis in rural pharmacy practice. *Am Pharm.* 1991;NS31(12):51-3.
- Casey M, Klingner J, Moscovice I. Access to rural pharmacy service in Minnesota, North Dakota, and South Dakota, Working Paper Series. Minneapolis: Rural Health Research Center–University of Minnesota; 2001.
- Epstein D. Can rural pharmacy survive? *Drug Topics.* 1996(Jul 22);140:58-60,62-3.
- Fraher EP, Slifkin RT, Smith L, Randolph R, Rudolf M, Homes GM. How might the Medicare Prescript Drug, Improvement and Modernization Act of 2003 affect the financial viability of rural pharmacies? An analysis of preimplementation prescription volume and payment sources in rural and urban areas. *Journal of Rural Health.* 2005;21(2):114-21.
- Gangeness D. Pharmaceutical care for rural patients: ominous trends. *J Am Pharm Assoc.* 1997;NS37:62-5,84.
- Hansen R, Schommer J, Larson T, et al. **Minnesota pharmacist workforce: a pharmacy perspective.** *Minn Pharm.* 2001;55(4):17-20.
- Harder P. *The Local Pharmacy has Closed: Social and Economic Implications for Residents and Businesses* [pharm D IV thesis]. Minneapolis (MN): University of Minnesota; 2001 26 p.
- Larson TA, Uden DL, Hadsall RS. Demographics of Minnesota pharmacy: trends in rural Minnesota. *Minn Pharm.* 1999;53(4):9-14,24.
- Minnesota Department of Health, Office of Rural Health and Primary Care, Professions Web site. Accessed at <http://www.health.state.mn.us/divs/chs/grants.htm#pharmacy>, December 8, 2006.

Minnesota Department of Health, Office of Rural Health and Primary Care, Professions Web site. Accessed at <http://www.health.state.mn.us/divs/chs/pharmloan.htm>, December 8, 2006.

Pedersen CA, Schommer JC. Agenda for pharmacy: workforce issues. *J Am Pharm Assoc.* 2001;41:368–9.

Rural Physician Associate Program Summary. Minneapolis: University of Minnesota Medical School; 2004–2005:8.

Traynor AP, Sorensen TD. Assessing risk for loss of rural pharmacy services in Minnesota. *J Am Pharm Assoc.* 2005;45:684–93.

Traynor AP, Sorensen TD. Student pharmacist perspectives of rural pharmacy practice. *J Am Pharm Assoc.* 2005;45:694–9.

Xiao H, Sorofman B, Manasse H, et. al. **Impact of pharmacy closures on patient use of prescription drugs.** *J Soc Admin Pharm.* 2000;17:25–33.

Xiao H, Sorofman B, Manasse H. The association between pharmacy closures and prescription drug use: a retrospective analysis of Medicaid prescription claims in Iowa. *Am J Manag Care.* 2000;6:366–72.