



# Issues That Face Rural Surgery in the United States

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The social and economic issues that encumber rural communities in the United States threaten surgical practices that serve them. The term *rural surgery* refers to the practice of surgery serving people in rural communities and geographically remote areas. The myriad issues fall into 3 broad areas that parallel the tectonic pressures on rural America and medical economics: the demographic and economic decline of rural communities; a change in surgery in America brought on by the workforce shortage in general surgery; and a shift in the structure of surgical practice from an independent practitioner—single hospital relationship to an employed corporate model. Each challenges relationships among the hospital, surgeon, and the community. Solutions lie in not considering each group in isolation, but considering the triad as a whole. A central task is to improve the quality of surgical care in rural America, a measure that will both drive case-loads to rural surgeons and hospitals and improve the care they provide to their communities.

## DEMOGRAPHIC AND ECONOMIC FACTORS

Long travel distances challenge simple outpatient appointments and complicate family arrangements for hospital stays. The rural population constituted 15% of the population in 2012, 46.2 million, a proportion that has decreased during the past decade from nearly 20% in 2004. Recent population estimates in 2012 demonstrated for the first time in US history a decline in total rural population.<sup>1-3</sup>

Patients in rural areas are more likely to be older, poorer, and have a major chronic illness. The federal poverty rate, 14.5% in urban areas, is 17.7% in rural counties, a gap of 3.2 points that is widening.<sup>4</sup> A demographic study of rural counties in 10 Great Plains states showed the proportion of adults aged 65 years and older in rural counties was 19% compared with 11% in urban areas.<sup>5</sup> The unemployment rate, increasing in the country

during the past decade, is rising faster and higher in rural counties. In February 2013, the rate, 8.1% for the country, was 8.7% in rural counties and 8.9% in the subset of rural counties with towns <10,000 population.<sup>6</sup>

Health insurance in rural America is an amalgam of the elderly and children who are covered by Medicare and Medicaid, the employed who have company plans, and those who do not have insurance. The proportion younger than age 64 years without health insurance in rural America was 17.4%, lower than the urban rate of 18%. However, at state and county levels, the picture changes. For those younger than 64 years, the rural noninsurance rate is lower than the urban rate in only 11 states. The lowest rates of insured adults are in rural counties that are not adjacent to metropolitan areas.<sup>7</sup>

Rural populations have low levels of educational attainment, a characteristic that predicts poor health.<sup>8</sup> In 2010, the share of adults older than the age of 25 years with a high school diploma was 81.7% in rural areas and 85.2% in metropolitan areas.<sup>9</sup>

These factors lead to health disparities in the incidence and mortality of specific conditions and the outcomes of treatment. Rural populations have both a higher incidence of chronic disease, including cancer and heart disease, and higher rates of crude all-causes mortality rates in rural areas.<sup>10</sup> Death rates from injury are higher in rural areas from 2004 to 2010.<sup>11</sup> No data are available for counties that do not have surgeons, but of those that have a shortage of primary physicians death rates from cancer are higher.<sup>12</sup>

## THE SURGICAL WORKFORCE SHORTAGE AND RURAL SURGERY

There is a critical surgical workforce shortage in rural America.<sup>13,14</sup> The situation is made worse by the overall shortage of general surgeons in the United States. The number of general surgeons in practice in 2005 was actually 723 fewer than in 1981. The general surgeon to population ratio has declined during that period, to 5.7 per 100,000 from 7.7, respectively. Shortages are worse in rural regions, where the ratio in 2005 was 5.0 per 100,000.<sup>15,16</sup> Of the 3,436 federally designated hospital service areas, 608 (18%) have no surgeon of any specialty, and another 962 (30%) have <3 surgeons per 100,000 population, the level defined by Ricketts and colleagues at the American College

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of Surgeons Health Policy Research Institute as a critical shortage.<sup>17</sup> The American College of Surgeons Health Policy Research Institute uses the apt term *surgical deserts* to describe such regions of the country.

Few newly trained surgeons choose a rural general surgical practice. More than 70% of new graduates of training programs in general surgery are choosing specialty fields.<sup>18</sup> Those who choose a rural practice do so because they were reared in a rural community, attended a nonurban secondary school or college, or have an interest in outdoor activities, such as hunting.<sup>19</sup> The declining numbers of young surgeons entering the rural practices make worse the aging surgical workforce in rural communities, where the proportion of general surgeons aged 50 to 62 years has climbed to 52% compared with 45% in urban areas.<sup>15</sup>

Rural and general surgical practices differ in terms of the sorts of cases performed and the breadth of practice,<sup>20</sup> most remarkably, endoscopic procedures, which constitute almost one fourth (17% to 24%) of rural surgical caseloads.<sup>21</sup> In a detailed survey of general surgeons in West Virginia, surgeons practicing in communities of <100,000 were more likely to include obstetric and gynecologic, otorhinolaryngologic, urologic, and orthopaedic surgical procedures in their caseloads. Graduating residents might not have adequate preparation to take over such caseloads in rural surgical practices.<sup>22</sup>

A number of reasons have been cited as contributing to the shortage of rural health practitioners, including lower salaries, less control over work hours, professional isolation, fewer spousal job opportunities, and fewer cultural amenities. In a 2006 survey, rural surgeons' compensation was on a par with that of their urban colleagues. Although total annual income was slightly less, local purchasing power was 13% higher because of a lower cost of living. Rural practitioners might be able to command higher rates from payers because of lack of competition. Higher rates are paid to rural practitioners under federal programs.<sup>23</sup>

Practice satisfaction and quality of life are crucial factors for both rural and urban surgeons.<sup>24</sup> Burdensome on-call coverage is more commonly a feature in small rural practices, a topic that dominated a recent electronic LISTSERV maintained by the American College of Surgeons Advisory Council for Rural Surgery in 2013. Surgeons shared frustrations of everyday call responsibilities and hospital demands created by practices where they are often the only surgeon, or one of a few who share call for a number of hospitals (Caropreso P, personal communication, January 22, 2014).

Rural surgeons are at risk of leaving their communities despite being compensated on a par with their urban colleagues. Rural counties have large swings in population to surgeon ratios that reflect the effect that the addition or

loss of a surgeon has on a thinly populated community. From 2006 to 2011, 7% of US counties (206 of 3,107) reported losing their surgical coverage entirely in a recent American College of Surgeons Health Policy Research Institute review, and more than one third saw a decline in the number of general surgeons per 100,000 population (37% [1,139 of 3,107]).<sup>25</sup>

Factors that favor retention of surgeons are likely little different than those that hold primary care physicians to rural communities. Circumstances that make a practitioner more likely to stay in a rural practice are whether they own their practice, have children younger than 18 years old in their household, and were native to the state. The dominant practice characteristic that made the physician more likely to leave the community was being on call >3 times a week. Increasing compensation (to >\$80,000 from \$60,000) decreased the likelihood of a physician leaving a practice somewhat (odds ratio to 1.1 from 1.3, respectively), but not significantly so.<sup>26</sup>

## FROM INDEPENDENT TO EMPLOYED

Hospitals depend on surgeons for financial viability. Nearly 30% of rural hospitals under Medicare prospective payment programs have negative cash flow margins, a percentage that increased from 2007 to 2009.<sup>27</sup> A practicing surgeon has a tremendous impact on hospital finances with effects that reach into the community. In one survey, a general surgical practice accounts for 21% of admissions and 43% of billed inpatient charges for a rural hospital. One general surgeon will generate a little more than \$700,000 of economic activity from the practice itself, nearly \$1.4 million for the hospital, \$2.7 million for the community, and 25.9 jobs.<sup>28</sup>

To insure against the loss of a vital cog in its financial engine, hospitals employ surgeons, "locking in" their services for a contracted period. Surgeons find employment an increasingly attractive option. In 2009, nearly two thirds (66.1%) of all general surgeons were employed, an increase from 47% in 2001. During the same period, the numbers of general surgeons in solo and 2-person practices decreased by 25% and 36%, respectively.<sup>29</sup> As noted here, retention of practitioners in rural areas is more likely when he or she owns the practice,<sup>26</sup> so lower levels of practice ownership among surgeons will continue to challenge rural workforce issues.

Administrative burdens associated with running an independent practice drive surgeons to employed positions.<sup>30</sup> Federal regulations that require the use of electronic medical record systems contribute little to care improvement and coordination but add expense, detract from practice efficiency, and decrease time spent by the

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