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Impact of Hurricanes Katrina and Rita on the Anesthesiology Workforce

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ABSTRACT

Introduction: Hurricanes Katrina and Rita impacted a large portion of the medical community in Louisiana. We attempt to determine their impact on the anesthesiology workforce in Louisiana.

Methods: In May 2006, a survey was mailed to 368 Louisiana anesthesiologists, collecting demographic data, retirement plans, impact of Hurricanes Katrina and Rita, position vacancies, practice conditions, and the general state of healthcare in their area. All 3 anesthesiology residency programs in the state were contacted regarding their recent graduates. The 2010 RAND survey of the anesthesiology workforce was reviewed with respect to findings relevant to the state and region.

Results: One hundred seventy surveys were returned, yielding a 46.2% response rate. Among the respondents, 13.9% intended to retire within 5 years and another 24% in 5 to 10 years. Since 2005, 63.9% had seen an increase in their daily caseload, 46.9% saw an increase in work hours, and 36.8% stated that their practices were trying to hire new anesthesiologists and were having difficulty filling these positions. Since 2005, the number of anesthesiology residents in Louisiana had declined by almost 50%, and the number of graduates remaining to practice in Louisiana had decreased by 43% from 7 to 4 annually.

Conclusions: Our 2006 survey provided qualitative evidence for a shortage of anesthesiologists in the state of Louisiana after the natural disasters in 2005 that was likely to worsen as residency output plummeted, fewer residents stayed in the state, and projected retirement increased. The regional data from the RAND survey a year later confirmed the impressions from our survey, with an estimate of an anesthesiologist shortage as high as 39% of the workforce. State membership surveys may serve as accurate barometers in the wake of major environmental upheavals affecting regional anesthesiology workforce conditions.

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INTRODUCTION

The physician shortage in the United States is a growing problem that has led the Association of American Medical Colleges to support a 30% increase in US medical school enrollment by 2015.[1] Factors such as the growth and aging of the population, changes in practice patterns, increasing regulation and paperwork, and a larger number of retiring doctors in the next 15 years all point to a worsening shortage of physicians. A report released by the Health Resources and Services Administration and the US Department of Health and Human Services further predicts that the shortage will be greatest in non–primary care specialties.[2] Anesthesiology is one such specialty that will be affected by these demands. In 2003, an assessment by Schubert et al[3] found a current shortage in anesthesiologists and projected a shortage through 2015.

In 2005, the state of Louisiana was hit hard by 2 natural disasters—Hurricanes Katrina and Rita. The effects of these hurricanes on the state are vast, and many of the most obvious have been examined. The medical community has had to adapt to the loss of several hospitals, loss of physicians from the state, and migration within as well as out of the state. Some people temporarily moved and ultimately returned, although others moved away permanently. Although these poststorm effects clearly impacted the anesthesiology community, the nature and extent of this impact were unclear at the time. In addition, largely because of the closure of Louisiana's largest teaching hospital, anesthesiology residency training in the state was devastated.[4] The goal of our study was to answer whether Louisiana can train enough anesthesiology physicians in the next 10 years to prevent a surgical healthcare access crisis. Our hypothesis was that the events of the year 2005 resulted in an acute

Table 1. Demographics

Total responses	170
Age, y (mean ± SD)	49.9 ± 11.9
Resident	12
Full-time anesthesiologist	139
Part-time anesthesiologist	4
Retired	14
Years in practice (mean ± SD)	18.9 ± 10.3
Practicing in Louisiana	156
Practicing outside Louisiana	2

anesthesiologist shortage in Louisiana and that demand for anesthesia services would continue to outpace supply for several years.

METHODS

A survey was mailed in May 2006 to 368 physicians listed as members of the Louisiana chapter of the American Society of Anesthesiologists (ASA), along with a prepaid return envelope. At the time, the ASA listed 276 active members in the state of Louisiana, 47 residents, and 45 retired anesthesiologists. Surveys were sent only once because of our belief that workforce and practice conditions were changing rapidly. The format of the survey questions is provided as part of Tables 1 and 2. In addition, we contacted all 3 anesthesiology residency training programs in Louisiana and queried their program directors about the numbers of their graduates during the last 5 years who left the state and who remained in Louisiana to practice. Other sources for our analysis included the recently published RAND Corporation report[5] and the American Medical Association Physician Master File.

RESULTS

Of the 368 surveys mailed, 3 were returned because the addressees had permanently moved out of state; 170 completed survey forms were received, for a response rate of 46.2%. Demographic information about survey respondents appears in Table 1, while the remaining responses are presented in Table 2. Of the 170 respondents, 139 identified themselves as practicing full-time anesthesiologists, 14 as retired, 12 as residents, 4 as part-time anesthesiologists, and 1 as a medical student. The medical student was omitted from the analysis. The average age of respondents was 49.9 years, and they had been in practice an average of 18.9 years.

Retirement Plans

Twenty-two respondents (13.9% of 158 who responded to the question) said that they planned to retire within the next 5 years, and another 38 (24%) replied they planned to retire within the next 5 to

Table 2. Retirement, Vacancies, Practice Conditions

Will you practice in Louisiana for the next 5 years?	
Yes	131
No	20
No response	19
Are you hiring new personnel?	
Yes, and having trouble hiring	53
Yes, and having no trouble	26
Not hiring	65
Average number looking to hire (n = 39)	1.8 (± 1.1)
Did the hurricanes change your retirement plans?	
No change	136
Delayed retirement	15
Retiring sooner	4
No response	15
Plan to retire:	
Greater than 10 years	93
Within 5-10 years	38
Within 2-5 years	16
Within 1-2 years	4
Less than 1 year	2
Already retired	5
No response	12
Has healthcare changed in your area?	
No response	13
No change	36
For the better	20
For the worse	101
Has there been a change in your daily caseload?	
Increased number of cases	92
Same number of cases	34
Decreased number of cases	18
Has there been a change in your work hours?	
Increased number of hours	67
Same number of hours	67
Decreased number of hours	9
Have your colleagues/partners discussed leaving for another state?	
No response	29
Yes	90
No	51
Have your colleagues/partners discussed early retirement?	
No response	32
Yes	31
No	107
Do you worry about being able to replace them if they leave?	
No response	32
Yes	94
No	44

10 years. Five respondents (3.2%) had already retired, and 93 (58.9%) stated that it would be longer than 10 years before they were going to retire. When asked if Hurricanes Rita and Katrina changed their retirement plans, 87.7% replied in the negative, 9.7% indicated that they would delay their retirement, and 2.6% stated that they would retire sooner.

Position Vacancies

Fifty-three (36.8% of respondents) replied that they were actively hiring anesthesiologists and having difficulty filling these open positions. The remainder indicated that they were either not hiring or not having difficulty filling their vacancies. The average number of anesthesiologist vacancies to be filled was 1.8 per practice that reported having difficulty filling vacancies.

Working Conditions

The working conditions section of the survey dealt with the overall health environment and the respondents' workload. Negative perceptions of local healthcare changes since the hurricanes were reported by 101 (64.3%); only 20 respondents (12.7%) responded that conditions had improved. Ninety-two (63.9%) reported an increase in the number of cases performed daily, while 67 (46.9%) replied that their work hours had increased. Only 18 respondents (12.5%) noticed a decrease in their daily caseload, and a mere 9 (6.3%) reported that their work hours had decreased.

Colleagues' Plans for Workforce Participation

Ninety respondents (63.8%) indicated that colleagues/partners had discussed leaving for another state. Thirty-one (22.5%) reported colleagues had discussed early retirement. Ninety-four (68.1%) believed it would be difficult to replace a colleague or partner who left.

Louisiana Anesthesiology Residency Programs

All 3 anesthesiology residency program directors responded with the number of residents who graduated from their programs in the years 2002-2007 and indicated how many stayed to practice in the state of Louisiana or planned to return after completing a fellowship. At Ochsner Clinic Foundation, 17 of the 32 graduates (53.1%) stayed in Louisiana (personal correspondence with Denise Arseneaux, Ochsner Clinic Foundation, Department of Anesthesiology, July 2006). The Louisiana State University (LSU)-Shreveport program reported that only 4 of 29 graduates (13.8%) remained in the state (personal correspondence with Scott Cassingham, LSU-Shreveport School of Medicine, Department of Anesthesiology, July 2006). The Tulane University residency program graduated 51 residents during the 6 years; 20 (39.2%) remained in Louisiana (personal correspondence with Patty Burke, Tulane University School of Medicine, Department of Anesthesiology, July 2006). In the intervening time since the survey was mailed, LSU-New Orleans has initiated an anesthesiology residency program and currently has 3 residents per class year. This number is expected to increase in the coming years.

DISCUSSION

Our 2006 survey of Louisiana residency programs and state society members shows that the number of graduating anesthesiology residents who remained in the state after Hurricanes Katrina and Rita was not sufficient to prevent a severe workforce shortfall as found in the RAND survey published in 2010. Our results further suggest that workload was increasing, practices had difficulty hiring anesthesiologists, and projected retirements would likely outnumber production of anesthesiologists in Louisiana for 5 to 10 years.

During the years 2002-2007, Louisiana's 3 anesthesiology residency programs graduated a total of 112 residents. Of these, 41 remained in the state after graduation or returned after a fellowship, amounting to an in-state retention rate of slightly less than 7 trainees per year. This number should be interpreted with the realization that the number of anesthesiology residency positions in Louisiana declined from a peak of 24 residents graduated per year to 13 per year since 2005. The size of the anesthesiology residency training program at Tulane University has been reduced by 75%. This reduction in anesthesiology training output was far greater than the 31.1% overall reduction in house staff being trained in New Orleans at the Tulane University School of Medicine and the LSU School of Medicine. This nearly 50% reduction in statewide anesthesiology resident training output contributed to the observed large decline in retention of state-trained anesthesiologists in Louisiana. In 2006, 4 residents from Ochsner Clinic Foundation and 3 residents from Tulane remained in Louisiana after graduating, for a total of 7. In 2007, this number declined further to only 4 anesthesiologists joining in-state practices or making commitments to return after fellowship training.

State workforce exit occurs with retirement, migration, disability, or death. In 2006, nearly 14% of Louisiana's anesthesiologists indicated they would retire within 5 years (2006-2010) (Figure), amounting to approximately 42 anesthesiologists or more than 8 per year extrapolated to the entire state population based on the 51.8% survey response. Similarly, in the 5 years to follow thereafter (2011-2016), another 73 would be expected to retire, increasing annual state

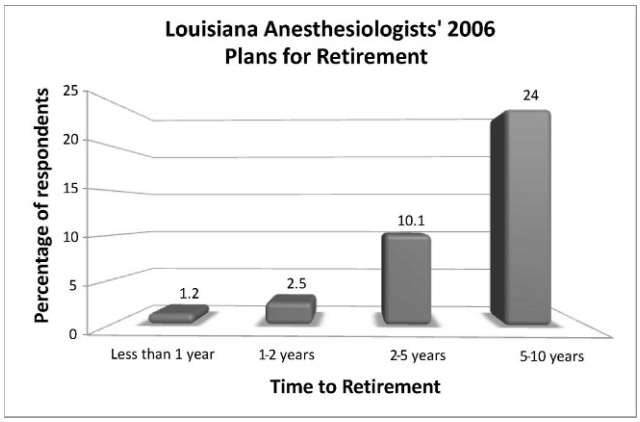

Figure. Louisiana anesthesiologists' 2006 plans for retirement.

workforce exit to nearly 15 per year through 2016, a rate of 5.4% of the state anesthesiology workforce. The retirement calculation does not take into consideration the other components of workforce exit such as migration (anesthesiologists leaving the state; 63.8% of survey respondents heard a colleague or partner considering migration), death, or disability.

Louisiana anesthesiology residency training programs currently graduate 16 residents annually, at a workforce production rate of 5.7%. At this rate, expected retirements could not be replaced with Louisiana trainees. Based on survey responses, demand for service appears to have risen as well, at least for the anesthesiologists remaining in the 2006 Louisiana workforce. Only 12.5% of survey replies indicated a reduction in daily caseload, while only 6.3% reported a decrease in work hours. Almost half of the anesthesiologists who responded had experienced an increase in work hours after the hurricanes, and more than half reported an increased daily caseload. With 36.8% of respondents stating that their practices had vacancies in 2006 and were having difficulty filling these positions, it is not surprising that a shortage of anesthesiologists existed in Louisiana in 2007, as demonstrated in the RAND report.[5]

Assuming 7 graduating residents remained to practice in Louisiana each year since 2006, the state would have lost a net of at least 1 to 2 anesthesiologists from its workforce during the years 2006-2010 unless replacements were recruited from out of state. Barring other developments, the state has been projected to lose a net of a further 17 anesthesiologists, resulting in a net loss of 28 anesthesiologists by the year 2017 (almost 10% of the current active anesthesiologists in the state). Moreover, practice conditions have required longer hours, with a greater caseload. Several respondents wrote comments describing an upsurge in obstetrical volume, specifically of patients with no prenatal care prior to presentation for delivery. Longer hours and more difficult work, along with a worsening perception of the regional healthcare system, might lead to undesirable perceptions and working conditions, reducing retention further while impeding recruitment and worsening shortage conditions further.

Our survey and workforce analysis have several important limitations. First, neither the survey nor other sources could accurately reflect recruitment from out of state, possibly leading to an overestimation of shortages. Further, although the survey accurately reflected conditions affecting anesthesiologists in 2006, a number of potentially countervailing changes have occurred since then. The region has undergone a substantial recovery from storm and flooding damages. For nearly 2 years now, an economic downturn has affected the healthcare field nationwide, restricting demand growth. Retirement plans are known to change in times of economic hardship, possibly again mitigating shortage predictions at this time. The survey itself may not have been entirely representative of Louisiana's anesthesiology workforce in 2006, although the high response rate speaks at least partially against this concern.

A landmark national study by the RAND Corporation—*An Analysis of the Labor Markets for Anesthesiology*—was published recently[5]; careful review shows that the conditions it chronicles in 2007 are congruent with our survey results in one region. The RAND study used several models in combination with survey data to attempt to predict future supply and demand of anesthesiologists in the United States. Given current retirement rates, entry rates into the workforce by residents, and growth in demand, the study predicts a national shortfall of 4,479 anesthesiology physicians by 2020.[5] This prediction was highly sensitive to changes in the retirement rate of anesthesiologists and to the growth in demand for anesthesia services that will likely occur with the rapid aging of the US population as baby boomers reach and surpass the age of 65. For example, the predicted shortfall of 4,479 anesthesiologists by 2020 assumed a retirement rate of 1.15% per year, amounting to 5.65% of the workforce retiring by 2015 and 11.30% retiring by 2020.

The RAND study's survey, however, found that 25% of anesthesiologists plan to retire by 2015, while another 30% plan to retire in the 5 years 2015-2020. Increasing the exit rate from 1.15% to 3% annually in the RAND prediction model increases the shortfall of anesthesiologists to 12,450 by 2020.[5]

The RAND report estimated the national anesthesiologist shortage in 2007 as 3,800 anesthesiologists, based primarily on survey and economic analyses.

Between the years 2004 and 2009, 54.8% of RAND respondents affirmed that they were working longer hours nationally. In the South, the percentage was even higher at 58.8%. Further, 68.2% of RAND respondents had open positions at their practices, and the mean number of job openings was 2.8.[5] One of the key findings of the RAND study was the existence of significant state-by-state variation in the anesthesiology workforce supply and demand relationship. For example, estimates ranged from an anesthesiologist surplus of 38% in the District of Columbia to a shortage of 82% in Alabama. In Louisiana, all 3 RAND models yielded a shortage of anesthesiologists, ranging from a shortfall estimate of 60 full-time equivalents to a shortage of 39% of the workforce.

Our 2006 survey provided qualitative evidence for a shortage of anesthesiologists in the state of Louisiana after the natural disasters of 2005 that was likely to worsen as residency output plummeted, fewer residents stayed in the state, and projected retirement increased. The regional data from the RAND survey a year later confirmed the impressions from our survey with an estimate of a severe anesthesiologist shortage in Louisiana. State membership surveys may serve as accurate barometers in the wake of major environmental upheavals affecting regional anesthesiology workforce conditions.

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