

Variability in surgical practice and patient characteristics in rural and urban US hospital settings

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CONTEXT: General surgeons are vital members of the rural health care team, backing-up primary care physicians and underpinning the trauma care system. Yet relatively few general surgeons practice in rural locations and their numbers in the United States have declined markedly in recent years.

OBJECTIVE: To help inform rural general surgery policy, we examined rural and urban differences in inpatient general surgery scope of practice, other commonly performed inpatient procedures, and surgical patient characteristics.

DESIGN, SETTING AND PATIENTS: Cross-sectional study of a probability sample of hospital patients undergoing 367,438 general surgery inpatient procedures performed in rural and urban hospitals in 24 states, as recorded in the 2005 Nationwide Inpatient Sample. Categorization of rural-urban hospital status used Rural-Urban Commuting Area codes to create both 2-level (urban, rural) and 4-level (urban, large rural town, small rural town, isolated small rural town) groupings.

MAIN OUTCOMES MEASURES: The frequency of: (1) inpatient general surgical procedures performed; (2) the frequency of other inpatient surgical procedures performed; (3) serious complications occurring during the hospitalization; and (4) predicted resource demand, length of stay, and mortality.

RESULTS: General surgical procedures comprised 21.4% of all inpatient procedures in rural hospitals compared to 17.9% of procedures in urban hospitals ($p < 0.001$). In small rural areas and isolated rural areas this proportion increased to 24.4% and 23.8%, respectively. Cholecystectomies, appendectomies, bowel procedures, and herniorrhaphies were proportionately more common in rural hospitals, as were obstetric-gynecologic and orthopedic procedures. Rural patients had fewer serious complications (9.4% vs. 12.7%, $p < 0.001$). Predicted resource demand ($p < .001$), length of stay ($p < .05$) and risk of mortality ($p < .01$) were all significantly lower for rural patients.

CONCLUSIONS: Rural hospitals concentrate on relatively common, low complexity inpatient procedures performed on relatively low-risk patients. General surgical, orthopedic and obstetric/gynecologic cases predominate. Findings may inform decisions about rural medical education and resource allocation.