

Trends in Inpatient Urological Surgery Practice Patterns

Scott R. Hawken, Lindsey A. Herrel, Chandy Ellimoottil, Zaojun Ye,
J. Quentin Clemens and David C. Miller*

From the Dow Division of Health Services Research, Department of Urology, University of Michigan, Ann Arbor, Michigan

Abstract

Introduction: As the nation's population ages and the number of practicing urologists per capita decreases, characterization of practice patterns is essential to understand the current state of the urological workforce and anticipate future needs. Accordingly, we examined trends in adult inpatient urological surgery practice patterns during a 5-year period.

Methods: We used the Nationwide Inpatient Sample data from 2005 through 2009 to identify surgeons and urological surgeries. We classified the urological surgeries into 1 of 7 clinical domains (endourology and stone disease, incontinence, urogenital reconstruction, urologic oncology, benign prostate, renal transplant, and other urological procedures). For each urological surgeon 3 parameters were determined for each year, including 1) case diversity (the number of distinct urological clinical domains in which he/she performed 2 or more procedures per year), 2) subspecialty (the predominant clinical domain of cases that each surgeon performed) and 3) subspecialty focus (the proportion of a surgeon's total urological cases per year that belonged to his/her assigned clinical domain). We examined trends in these metrics during a 5-year period and compared results between urban and rural practice settings.

Results: We analyzed data for 2,237 individual surgeons performing 144,138 inpatient surgeries. Urologists' practice patterns evolved with time toward less case diversity ($p < 0.001$) and greater subspecialty focus ($p < 0.001$). These trends were more pronounced for surgeons practicing in urban vs rural settings ($p < 0.05$).

Conclusions: At a national level urologists' inpatient surgical practice patterns are narrowing, with less case diversity and greater subspecialty focus. These trends are even more prominent among urologists in urban compared with rural practice settings.

Key Words: health manpower; urology; practice patterns, physicians'; urologic surgical procedures

Abbreviation and Acronym

NIS = Nationwide Inpatient Sample

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* Correspondence: Department of Urology, University of Michigan, NCRC Building 16, Room 108E, 2800 Plymouth Rd., Ann Arbor, Michigan 48109-2800 (telephone: 734-936-0054; FAX: 734-232-2400; e-mail address: dcmiller@med.umich.edu).

The United States population is aging, creating greater demand for urological and other medical services.^{1,2} Concurrently the overall number of urologists per capita is decreasing.^{3–5} Moreover, the surgical practice patterns for many urologists are being influenced and modified by several factors, including the movement toward large group practices, preferences for urban practice settings and increasing clinical subspecialization.^{3,6,7} Collectively these developments have raised some concerns about imperiled access for patients in need of urological specialty care, particularly in rural areas.³

One way to explore these concerns is to examine longitudinal trends in urologists' inpatient surgical practice patterns, including differences according to urban vs rural practice settings. By evaluating changes in the diversity of inpatient procedures performed, one can gain insight into whether the breadth of surgical care provided by most urologists is expanding or contracting. In addition to case diversity, assessment of inpatient practice patterns provides insight into trends in subspecialty focus, ie the degree to which urologists' caseloads are comprised of procedures from their predominant clinical subspecialty. Taken together, such data will inform the degree to which contemporary urologists are maintaining (or not) a broad surgical practice.

In this context we used the Nationwide Inpatient Sample to investigate trends in urologists' inpatient surgical practice patterns. Ultimately a better understanding of current trends will aid efforts to anticipate workforce needs in the foreseeable future.

Methods

Data Source

We conducted a retrospective cohort study of surgeons performing inpatient urological procedures in hospitals included in the NIS from 2005 through 2009. The NIS contains approximately 8 million standard hospital discharge abstracts from 44 states, approximating a 20% stratified sample of all community hospitals in the U.S.⁸ The discharge abstracts include patient demographics, ICD-9-CM diagnosis and procedures codes, encrypted physician and surgeon identifiers, hospital location (urban or rural as defined by Core Based Statistical Area codes), and admission and discharge information.

Identification of Surgical Procedures

We identified adult (18 years or older) inpatient surgical procedures by the presence of a principal ICD-9-CM

procedure code meeting NIS criteria for a major procedure performed in an operating room.⁹ We then used Clinical Classifications Software based on ICD-9-CM codes to identify all major inpatient urological procedures (see supplementary Appendix, <http://urologypracticejournal.com/>).^{9,10} At the time of the study the ICD-10-CM system for inpatient hospital coding had not yet been adopted in the U.S.

Identification of Urological Surgeons

For each year of data we used an encrypted surgeon identifier present in the NIS to identify unique surgeons and we excluded states with inconsistent reporting of this variable.^{11,12} To classify surgeons as urologists, we required that they perform 10 or more major inpatient urological procedures in a given year,¹³ and that the majority of their inpatient surgeries were major urological procedures. Surgeons meeting these criteria were defined as urologists. We classified each urologist as practicing in an urban or rural setting based on the location of the hospital where he/she performed a majority of his/her inpatient urological procedures.

Classifying Urological Procedures

Our goal in this analysis was to examine urologist inpatient surgical practice patterns, including the overall breadth of procedures performed and the degree of focus on specific clinical domains of urological procedures. To do this, we assigned each urological ICD-9-CM procedure code into 1 of 7 mutually exclusive and clinically relevant domains, including endourology and stone disease, incontinence, urogenital reconstruction, urologic oncology, benign prostate, renal transplant and other urological procedures (primarily lysis of adhesions and suprapubic cystostomy) (see supplementary Appendix, <http://urologypracticejournal.com/>).¹⁴ Throughout the study we refer to each of these categories as a urological clinical domain.

Case Diversity

Our first measure of interest was the case diversity of each urologist, defined for this analysis as the total number of distinct clinical domains where each urologist performed at least 2 major urological procedures. This measure reflects the breadth of conditions and procedures comprising a urologist's inpatient surgical practice. For analytic purposes we defined urologists as having high case diversity if they performed inpatient procedures from more than 4 distinct

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