
Increasing Costs of Urinary Incontinence Among Female Medicare Beneficiaries

Jennifer T. Anger,* Christopher S. Saigal, Rodger Madison, Geoffrey Joyce, Mark S. Litwin† and the Urologic Diseases of America Project

From the Departments of Urology and Health Services, University of California, Los Angeles, David Geffen School of Medicine and School of Public Health, Los Angeles, and Rand Corporation, Santa Monica, California

Purpose: We measured the financial burden of urinary incontinence in the United States from 1992 to 1998 among women 65 years old or older.

Materials and Methods: We analyzed Medicare claims for 1992, 1995 and 1998 and estimated spending on the treatment of urinary incontinence. Total costs were stratified by type of service (inpatient, outpatient and emergency department).

Results: Costs of urinary incontinence among older women nearly doubled between 1992 and 1998 in nominal dollars, from \$128 million to \$234 million, primarily due to increases in physician office visits and ambulatory surgery. The cost of inpatient services increased only slightly during the period. The increase in total spending was due almost exclusively to the increase in the number of women treated for incontinence. After adjusting for inflation, per capita treatment costs decreased about 15% during the study.

Conclusions: This shift from inpatient to outpatient care likely reflects the general shift of surgical procedures to the outpatient setting, as well as the advent of new minimally invasive incontinence procedures. In addition, increased awareness of incontinence and the marketing of new drugs for its treatment, specifically anticholinergic medication for overactive bladder symptoms, may have increased the number of office visits. While claims based Medicare expenditures are substantial, they do not include the costs of pads or medications and, therefore, underestimate the true financial burden of incontinence on the aging community.

Key Words: economics, costs and cost analysis, Medicare, urinary incontinence, women's health

Urinary incontinence affects from 15% to 50% of women of all ages.¹ The National Health and Nutrition Examination Survey found the overall prevalence of urinary incontinence among a national sample of community dwelling women interviewed to be 38%.^{1,2} Urinary incontinence is one of the most prevalent chronic diseases, although it is often not recognized as such by the United States health care system. It has been estimated that approximately 1 in 10 American women undergoes surgery for urinary incontinence or pelvic organ prolapse, and a large minority of women bears the cost of pads, medications and nonsurgical therapies.^{1,2}

The annual direct cost of incontinence is similar to that for other chronic diseases, such as osteoporosis, Alzheimer's disease and arthritis.³ Total spending has increased in large part due to increases in the number of Medicare beneficiaries older than 65 years treated for urinary incontinence.

Many categories of expenditures make up the overall financial burden of urinary incontinence. Costs associated with either ineffective treatment or conservative management, including pads/diapers, protection, and laundry, account for almost 70% of the total cost of care.⁴ Other costs include complications, such as urinary infections and bedsores (6% of costs),⁴ and nursing home admission (14%). Conversely, diagnosis and treatment make up only 10% of the financial burden of incontinence.⁴

Although a large proportion of costs associated with incontinence are paid out-of-pocket and, thus, cannot be captured with Medicare claims data, analysis of these claims can provide important insight into evolving patterns of care. Treatment for incontinence has the potential to mitigate out-of-pocket costs for women with incontinence if the treatment decreases the requirement for pads. Medicare claims data are particularly useful in that they allow for the assessment of the cost of disease treatment in a large, heterogeneous, nationwide sample of the elderly population across various clinical settings. To measure changes in the economic burden of urinary incontinence in women 65 years old or older we reviewed the trends in Medicare costs from 1992 to 1998.

MATERIALS AND METHODS

We analyzed claims data for 1992, 1995 and 1998 from CMS to estimate use and average costs for the female Medicare population. Data from the 3 Medicare files (MEDPAR [Medicare

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* Correspondence: Department of Urology, University of California, Los Angeles, Box 951738, Los Angeles, California 90095-1738 (telephone: 310-206-8183; FAX: 310-206-5343; e-mail: janger@mednet.ucla.edu).

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Provider Analysis and Review], carrier and outpatient) were linked to determine use in the inpatient, ambulatory surgery center, hospital outpatient, physician office and emergency room settings. Average payments for incontinence by place of service were also calculated from these files (Appendix 1).⁵

Facility records in the inpatient and outpatient files were evaluated to ascertain the number of visits to inpatient hospitals, emergency rooms, hospital outpatient departments, and ambulatory surgery centers.⁵ Personal identifiers and dates of service for these visits were linked to the matching line items listing payment for those services recorded in the carrier file.⁴ An algorithm was developed to assign the remaining carrier file line items and outpatient file records to the appropriate place of service. Use of physician office visits was determined by examining line items in the carrier file for appropriate place of service and physician evaluation and management billing codes.⁵

Remaining unmatched line items and claims from the outpatient file were totaled for incontinence services by place of service. Total dollars of expenditure associated with these unmatched items were then added to the total expenditure calculation for each place of service (physician office, hospital outpatient, hospital inpatient, ambulatory surgery, or emergency room). Average cost per service unit was calculated by dividing this total by the number of incontinence related visits to that place of service.⁵

At the completion of the matching process, descriptive tables were generated using ICD-9-CM diagnosis codes for incontinence related services (Appendix 2). Hospitalization or physician office visit was used as the unit of analysis for the number of claims for each type of service. Denominators were derived using the CMS enrollment file. Because a 5% sample of Medicare records was used, national estimates of service use were obtained by multiplying counts by a constant weight of 20.⁵ Because Medicare does not provide full coverage for all services, beneficiaries pay deductibles and coinsurance expenses under Part A and Part B. These expenses are not included in the Medicare claims. To capture these costs the recommendations of the CMS Office of the Actuary were followed, with Part A payments inflated by 8% and Part B payments inflated by 38%.^{5,6} Unless stated otherwise all expenditures for medical services were reported in nominal dollars.

RESULTS

Costs of urinary incontinence among female Medicare beneficiaries (65 years old or older) nearly doubled between 1992 and 1998, from \$128.1 million to \$234.4 million. Adjusting expenditures to 1998 dollars, this signifies an increase of \$84.7 million (from \$149.7 million to \$234.4 million).

This large increase in incontinence costs was primarily due to increased aggregate costs for physician office visits (from \$25.7 to \$75.9 million) and ambulatory surgery (from \$9.3 million to \$42.8 million, see [table](#)) during this period. At the same time overall inpatient costs increased only modestly between 1992 and 1995, then decreased slightly in 1998. Emergency room costs for the treatment of incontinence were small and largely unchanged during the study, increasing only slightly from 1992 to 1995 (from \$0.4 to \$1.1 million), then decreasing from 1995 to 1998 (from \$1.1 to \$0.6 million, see [table](#)).

Between 1992 and 1998, outpatient expenditures for female Medicare beneficiaries 65 years old or older for treatment of

	\$ Millions (% total)		
	1992	1995	1998
Total	128.1	198.7	234.4
Inpatient	90.5 (70.6)	110.9 (55.8)	110.1 (47.0)
Outpatient:			
Physician office	25.7 (20.1)	46.4 (23.4)	75.9 (32.4)
Hospital outpatient	2.2 (1.7)	3.5 (1.8)	5.0 (2.1)
Ambulatory surgery	9.3 (7.2)	36.8 (18.5)	42.8 (18.2)
Emergency room	0.4 (0.3)	1.1 (0.6)	0.6 (0.2)

Percentages may not add to 100% because of rounding. Source: CMS claims, 1992, 1995, 1998.

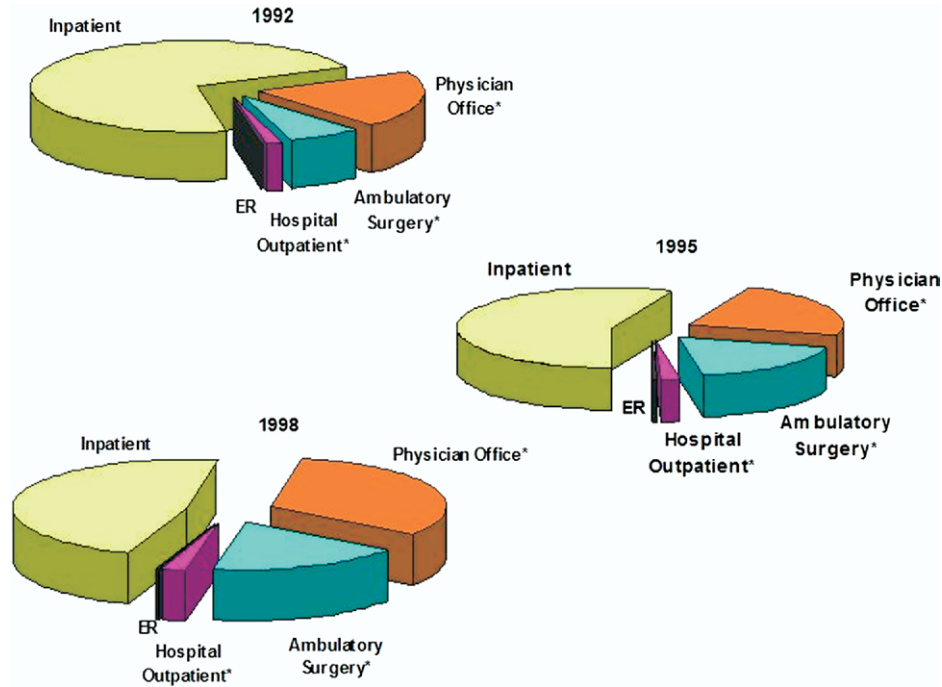
urinary incontinence (including physician office visits, hospital outpatient care, and ambulatory surgery) increased from 29.0% to 52.7% of the total expenditures. In contrast, inpatient care decreased from 70.6% in 1992 to 47.0% in 1998 (see [figure](#)).

Surprisingly the large increase in incontinence expenditures from 1992 to 1998 occurred despite a small decrease in per capita costs during the 6-year period. The number of women 65 years old or older treated for urinary incontinence increased by 85% between 1992 and 1998, whereas average spending per treated beneficiary actually decreased during the study period. During this period there was a 15% decrease in per capita spending from \$825 in 1992 to \$699 in 1998 (adjusted for inflation) which mitigated the increase in total spending.

DISCUSSION

Our study has 2 principal findings. First, the costs of incontinence care nearly doubled among female Medicare beneficiaries from 1992 to 1998. This is primarily due to the dramatic increase in the number of older women being treated for urinary incontinence. Our findings are consistent with those of Thorpe et al, whose analysis revealed that the increase in treated disease prevalence, not the increase in per capita spending, was the most important determinant of increasing private insurance spending between 1997 and 2002.⁷ The increasing socioeconomic impact of urinary incontinence in the elderly is also in large part a result of the aging of the general population.⁸ In fact Wilson et al estimated the annual costs for women 65 years old or older to be more than twice the costs for those younger than 65 years,⁴ reflecting the higher prevalence of incontinence and institutionalization among the elderly.

Our second principal finding was a shift in expenditures from the inpatient to the outpatient setting. During the 1990s medical expenditures in general shifted to the outpatient setting.¹ This change in venue probably reflects the shift of surgical procedures to the outpatient setting, as well as the advent of new minimally invasive incontinence procedures during this period,^{1,2} such as mid urethral pubovaginal slings and periurethral collagen injections. Many nonsurgical therapies performed in the outpatient setting have also gained popularity, such as pelvic floor rehabilitation, biofeedback, and behavioral therapy. In addition, the increase in awareness of incontinence and the marketing of new anticholinergic medications for its treatment may have increased the number of women seeking treatment in ambulatory settings.¹ The shift from inpatient to outpatient treatment has led to a reduction in per capita costs



Expenditures for female beneficiaries 65 years old or older for treatment of urinary incontinence (in nominal dollars, not adjusted for inflation).

that has actually dampened the economic impact of the increased number of older women being treated for urinary incontinence. We expect this trend toward outpatient care to increase further with the expansion of ambulatory surgery centers and the increasing popularity of outpatient incontinence procedures such as minimally invasive pubovaginal slings for stress incontinence and sacral neuromodulation for urge incontinence. In light of the increasing socioeconomic impact of urinary incontinence, such a shift toward outpatient treatment may serve as an excellent cost control containment strategy.

Our use of Medicare claims data assesses only a fraction of incontinence expenditures (10%),³ and does not cover the largest incontinence expenditure, routine care costs. However, Medicare claims are an accurate measure of diagnosis and nonpharmacological treatment related costs. Wilson et al estimated diagnosis and treatment related costs for women 65 years old or older with incontinence (in 1995 dollars) to be \$381 million.⁴ This estimate included only surgical treatment and behavioral therapy, and was based on the assumption that all women diagnosed with stress incontinence and 50% with mixed incontinence were considered candidates for surgery. Our findings from Medicare claims reveal that the costs of diagnosis and treatment of incontinence are lower, although similar to the estimates of Wilson et al (\$234 million vs \$381 million).⁴ Given that our analysis relies on submitted claims, reflecting care actually delivered as opposed to an estimate of care which might be delivered, the discrepancy between our analysis and other estimations is more likely due to overestimation of care delivery for incontinence in other studies.

Increasing costs of medical care have led health care decision makers to evaluate new tests and therapies to compare value.^{3,9} The 2nd International Consultation on Incontinence (Paris, July 2001) encouraged the inclusion of economic evaluation and utilities measurement, preferably cost-effectiveness

analysis, in future incontinence studies.^{3,10} The consultant identified priority areas for research on the economics of incontinence such as direct, indirect and routine care costs; incontinence related institutionalization and hospitalization; stratifying costs by age, type of incontinence and health care systems; utilities and willingness to pay; and cost implication of incontinence progression and remission.^{3,10} Cost-effectiveness analyses in urinary incontinence have focused on strategies for nursing home management, diagnostic testing and comparison of treatments for incontinence.^{2,3} Many of these studies are limited by minimal data on costs and health outcomes, outdated estimates of incontinence prevalence, limited information on the impact of incontinence on hospitalizations and outpatient management, and inadequate sensitivity analyses.³

The cost trends identified in this study allow for the development of a framework for formulating cost-effectiveness analyses around such trends. The growth in the population 65 years old or older is likely to cause a further increase in expenditures for incontinence. However, with the ongoing shift toward outpatient management, significant savings will likely accompany the decrease in inpatient admissions. In addition, given that routine care makes up 70% of incontinence expenditures, earlier diagnosis and treatment of incontinence should substantially reduce the long-term costs of routine care products such as pads and diapers. In fact, in a recent study of stress incontinence 4 years of routine care costs were equal to the cost of 1 surgical treatment.^{4,11} Surgical therapy has much lower aggregate long-term costs compared with other therapies or routine care, which require continued investment.^{4,11} Thus, it is possible that increasing use of outpatient surgery for incontinence, specifically stress incontinence, may reduce the overall financial burden of incontinence to society by eliminating routine care costs.

The 1999 to 2000 National Health and Nutrition Examination Survey identified 6.8 million women 65 years old or older

with incontinence.¹ Based on Wilson et al's total direct cost estimate of \$12.4 billion for women with incontinence, pads and routine care costs account for \$8.68 billion or 70% of the total costs of incontinence.⁴ If all women with incontinence were to be treated the total cost for incontinence diagnosis and treatment would be \$4.76 billion (based on a per capita cost of diagnosis and treatment of \$700 multiplied by 6.8 million women). Assuming that 25% of these women still need pads despite treatment, then an additional \$2.18 billion (25% of 8.7 billion) is added to the \$4.76 billion, totaling \$6.94 billion. This total is significantly less than the routine care cost estimate of \$8.68 billion (a difference of \$1.75 billion), suggesting that treating all women with incontinence may be effective in reducing Medicare expenditures. Of note, these estimates do not account for costs of treatment complications and lost work, nor do they include pharmacotherapy, which is the primary treatment modality for urge incontinence and can be quite costly.

Like most administrative data sets Medicare claims are limited by their reliance on ICD-9 codes to identify disease conditions and treatments.¹² This can result in underestimation of use depending on the sensitivity and specificity of the diagnosis and procedure codes. Coding is often incomplete and, therefore, not all patients treated for incontinence are correctly identified. In addition, while claims based Medicare costs are substantial they do not include the costs of pads or medications and, therefore, underestimate the true financial burden of incontinence on the aging community.

CONCLUSIONS

Medical expenditures for urinary incontinence among female Medicare beneficiaries 65 years old or older nearly doubled between 1992 and 1998. This is primarily due to the dramatic increase in the number of women older than 65 years being treated for incontinence in addition to medical inflation during the study. The advent of new incontinence procedures and the increase in awareness of incontinence during this period have also contributed to this increase in expenditures. We also found a large shift from inpatient to outpatient care, which likely reflects the general shift of care to the outpatient setting.

APPENDIX 1

Medicare Databases Selected for Analysis		
Database	Acronym	Purpose
Centers for Medicare and Medicaid Services-Medicare Provider Analysis and Review	CMS-MEDPAR	Records of hospital inpatient services for Medicare beneficiaries
Centers for Medicare and Medicaid Services-Carrier File	CMS-Carrier	Claims submitted by noninstitutional providers for Medicare beneficiaries
Centers for Medicare and Medicaid Services-Outpatient File	CMS-Outpatient	Claims submitted by institutional outpatient providers for Medicare beneficiaries
Centers for Medicare and Medicaid Services-Denominator File	CMS-Denominator	Demographic and enrollment information on Medicare beneficiaries

APPENDIX 2

Codes Used in the Diagnosis and Management of Female Urinary Incontinence	
Females 18 years old or older with one of the following ICD-9 diagnosis codes but not a coexisting 952.xx or 953.xx code:	
596.51	Hypertonicity of bladder
596.52	Low bladder compliance
596.59	Other functional disorder of bladder
599.8	Other specified disorders of urethra and urinary tract
599.81	Urethral hypermobility
599.82	Intrinsic (urethral) sphincter deficiency (ISD)
599.83	Urethral instability
599.84	Other specified disorders of urethra
625.6	Stress incontinence, female
788.3	Urinary incontinence
788.30	Urinary incontinence unspecified
788.31	Urge incontinence
788.33	Mixed incontinence, male, female
788.34	Incontinence without sensory awareness
788.37	Continuous leakage
Fistulas	
596.1	Intestinovesical fistula
596.2	Vesical fistula not elsewhere classified
619.1	Digestive-genital tract fistula, female
619.0	Urinary-genital tract fistula, female
Spinal cord injury related incontinence (when associated with other ICD-9 diagnosis codes for spinal cord injury 952.xx or 953.xx)	
344.61	Cauda equina syndrome with neurogenic bladder
596.51	Hypertonicity of bladder (specified as overactive bladder in 2001; included if associated with diagnosis code 952.xx)
596.52	Low compliance bladder
596.54	Neurogenic bladder, not otherwise specified
596.55	Detrusor sphincter dyssynergia
596.59	Other functional disorder of bladder
599.8	Other specified disorders of urethra and urinary tract
599.84	Other specified disorders of urethra
625.6	Stress incontinence, female
788.3	Urinary incontinence
788.31	Urge incontinence
788.32	Stress incontinence, male
788.33	Mixed incontinence, male and female
788.34	Incontinence without sensory awareness
788.37	Continuous leakage:
788.39	Other urinary incontinence

Abbreviations and Acronyms	
CMS	= Centers for Medicare and Medicaid Services
ICD-9-CM	= International Classification of Diseases, 9th Revision, Clinical Modification

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EDITORIAL COMMENT

This is an interesting study in which the authors attempt to determine if the costs associated with the treatment of uri-

nary incontinence changed between 1992 and 1998. The authors reviewed Medicare claims data from this period, and from their analysis concluded that while the overall expenditures increased significantly due to larger numbers of patients undergoing treatment, the per capita costs decreased. They suggest that this decrease is due to the use of less invasive treatments such as collagen injections, as well as a trend toward the use of outpatient procedures. While this finding may be true for stress incontinence the data presented do not prove this conclusively. I doubt the overall per capita expenditures have actually decreased if the costs associated with pharmacological therapy are included given the onslaught of new, expensive, heavily marketed name brand anticholinergics during this period. The authors appropriately note the inability to quantify medication expense or expense due to pad use relying on claims data alone. The conclusions reached in this article suggesting the costs associated with the treatment of incontinence are decreasing may be true, but only if the surgical management of stress incontinence is considered.

Robert J. Evans
The Urology Center
Greensboro, North Carolina

REPLY BY AUTHORS

The introduction of Medicare Part D, which for the first time provides coverage for outpatient prescription drugs, will allow us in the near future to assess how much of the observed reduction in medical costs is offset by the increased use and spending on pharmaceuticals for the treatment of incontinence.