

# Comparison of Economic Impact of Chronic Prostatitis/Chronic Pelvic Pain Syndrome and Interstitial Cystitis/Painful Bladder Syndrome

J. Quentin Clemens, Talar Markossian, and Elizabeth A. Calhoun

<b>OBJECTIVES</b>	To perform a comparison of the economic impact of chronic prostatitis/chronic pelvic pain syndrome (CP/CPPS) and interstitial cystitis/painful bladder syndrome (IC/PBS) because limited information is available. Furthermore, no direct comparisons of the costs of these 2 conditions have been performed. Such a comparison is relevant because the distinction between the 2 conditions is not always clear.
<b>METHODS</b>	We recruited 62 men with CP/CPPS and 43 women with IC/PBS from a tertiary care outpatient urology clinic. Information about hospitalizations, laboratory tests, physician visits, telephone calls, medication use, and lost productivity was obtained from written questionnaires. Direct medical cost estimates were determined from hospital cost accounting data, the 2005 Physician Fee Schedule Book, and the 2005 Redbook for pharmaceuticals. Indirect costs were determined from patient-reported annual income and patient-reported hours lost from work during the most recent 3-month period.
<b>RESULTS</b>	Using Medicare rates, the annualized direct costs per person were \$3631 for IC/PBS and \$3017 for CP/CPPS. Using non-Medicare rates for outpatient visits and tests/procedures, the annual per person costs increased substantially to \$7043 for IC/PBS and \$6534 for CP/CPPS. Sixteen patients with CP/CPPS (26%) and 8 with IC/PBS (19%) reported lost wages as a result of their condition in the previous 3 months.
<b>CONCLUSIONS</b>	Both CP/CPPS and IC/PBS have very similar and substantial direct and indirect costs. The greater costs reflected by the non-Medicare rates may more accurately reflect the true costs, given that a large proportion of these patients were <65 years old. UROLOGY xx: xxx, xxxx. © 2009 Elsevier Inc.

Interstitial cystitis/painful bladder syndrome (IC/PBS) and chronic prostatitis/chronic pelvic pain syndrome (CP/CPPS) are enigmatic pelvic pain conditions that are frequently encountered in urology practice. Although these conditions are typically considered separate entities, there are actually many similarities between the 2. Patients with these conditions typically complain of similar symptoms (eg, pain, voiding symptoms, and sexual dysfunction). Furthermore, the etiology of these conditions is unknown, and no consistently effective treatments are available for either. These similarities have been implicitly acknowledged by the National Institutes of Health by the formation of the Urologic Pelvic Pain Collaborative Research Network to study both condi-

tions simultaneously (available from: <http://www.cceb.upenn.edu/uppcrn>). Although the economic impact of the 2 conditions has been studied separately,<sup>1-5</sup> no direct comparison of the costs associated with the 2 conditions has been conducted. The aims of this study were to assess and compare the direct and indirect costs of both IC/PBS and CP/CPPS using identical methods.

## MATERIAL AND METHODS

### Subjects

The sample consisted of 43 women and 62 men from the Northwestern University outpatient urology clinic. The patients were identified and recruited according to a physician diagnosis of IC/PBS for the women and CP/CPPS for the men. The patients were presented with a resource use questionnaire while waiting in the clinic or were mailed a questionnaire after being identified in the clinic setting. The institutional review board approved the study.

### Questionnaire Content

The questionnaire included demographic information (eg, age, race, education, annual household income, insurance type), medical history (queries about 28 different medical conditions,

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*From the Department of Urology, Northwestern University Feinberg School of Medicine; and Department of Health Policy and Administration, University of Illinois School of Public Health, Chicago, Illinois*

*Reprint requests: J. Quentin Clemens, M.D., Department of Urology, University of Michigan, Medical Center, 1500 East Medical Center Drive, Taubman Center 3875, Ann Arbor, MI 48109-5330. E-mail: [qclemens@umich.edu](mailto:qclemens@umich.edu)*

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including those used for exclusion criteria), substance use (ie, tobacco, alcohol, caffeine), and the presence of a family history of IC/PBS and CP/CPPS. A resource use survey was developed to evaluate the specific costs associated with pelvic pain or discomfort. Detailed information was recorded about hospital admissions, outpatient office visits (physician and nonphysician), medication use, laboratory tests/diagnostic procedures, telephone calls, and disease-related work absenteeism during the previous 3 months. Symptom severity was assessed using the National Institutes of Health Chronic Prostatitis Symptom Index<sup>6</sup> and the Interstitial Cystitis Symptom Index.<sup>7</sup>

### Cost Determination

Outpatient visits and laboratory tests/procedures were converted into cost units, with the direct medical cost estimates determined using hospital cost accounting data (level 3 visit), the “2005 Physician Fee Schedule Book,”<sup>8</sup> and average wholesale prices listed in the 2005 “Red Book: Pharmacy Fundamental Reference Book.”<sup>9</sup> The costs incurred by each subject were calculated by multiplying each patient-reported unit of resource consumption by its corresponding cost. Medication costs were calculated using the patient-reported dosage and number of doses taken daily, which were converted to the cost per day and multiplied by the number of days taken during a 90-day period.

Direct costs were estimated using 2 cost mechanisms: Medicare rates and non-Medicare (ie, private insurance, managed care) reimbursement. Non-Medicare rates might provide a more realistic cost estimate for IC/PBS and CP/CPPS, because most individuals diagnosed with the conditions are <65 years old. The cost estimates using the Medicare rates allow for comparisons across other studies that used the Medicare rates.

Indirect costs were determined using the patient-reported annual income and hours missed from work specifically because of IC/PBS or CP/CPPS. The number of hours of absenteeism during the 3-month period was multiplied by the calculated hourly wage. All costs in the study are reported in 2005 U.S. dollars.

### Symptom Severity and Cost

For IC/PBS, “severe” symptoms were defined as a score of  $\geq 12$  on the Interstitial Cystitis Symptom Index (score range 0-20). For CP/CPPS, “severe” symptoms were defined as a score of  $\geq 15$  on the National Institutes of Health Chronic Prostatitis Symptom Index (score range 0-43). The mean direct costs were compared between the severe and mild groups for each condition.

### Statistical Analysis

Statistical analyses were performed using Statistical Package for Social Sciences, version 12 (SPSS, Chicago, IL).

## RESULTS

### Demographics

The demographic characteristics are listed in Table 1. The mean age of the male and female cohorts was identical (51 years). Most subjects were white and college educated. An annual household income  $> \$50\,000$  was reported by 65% of the women and 73% of the men.

### Use of Medical Services

A summary of outpatient visits and procedures related to IC/PBS and CP/CPPS for the preceding 3 months is

**Table 1.** Demographic characteristics of study participants

Variable	IC/PBS	CP/CPPS
Patients (n)	43	62
Age (y)		
Mean	51	51
Range	23-89	24-83
White race (%)	88	84
College graduate (%)	63	77
Income $\geq \$50\,000$ (%)	42	29
Income $\geq \$100\,000$ (%)	23	45

IC/PBS = interstitial cystitis/painful bladder syndrome; CP/CPPS = chronic prostatitis/chronic pelvic pain syndrome.

**Table 2.** Outpatient visits and procedures for preceding 3 months

Variable	IC/PBS (n)	CP/CPPS (n)
Outpatient visits		
Urology	27 (63)	42 (68)
General practitioner	14 (33)	21 (34)
Pain specialist	7 (16)	6 (10)
Emergency room	4 (9)	7 (11)
Psychiatrist	4 (9)	3 (5)
Chiropractor	3 (7)	3 (5)
Acupuncturist	0	3 (5)
Other	9 (21)	4 (7)
Total	30 (70)	45 (73)
Procedures/tests		
Urinalysis	19 (44)	35 (57)
Cystoscopy	14 (33)	12 (19)
Urine culture	16 (37)	20 (32)
Pelvic magnetic resonance imaging	4 (9)	6 (10)
Urodynamic study	3 (7)	3 (5)
Transrectal ultrasonography		5 (8)
Semen analysis		5 (8)
Other	5 (12)	10 (16)
Total	25 (58)	42 (68)

Data in parentheses are percentages.

provided in Table 2. Of the 43 women and 62 men, 30 (70%) and 45 (73%) reported  $\geq 1$  outpatient visit related to IC/PBS or CP/CPPS, respectively. The distribution of specialist visits was quite similar. Urology appointments were most common and were reported by 63% of women and 68% of men. Also, 11% of the men and 9% of the women reported an emergency room visit in the preceding 3 months because of their pelvic pain symptoms.

Fully 58% of those with IC/PBS and 68% of those with CP/CPPS reported undergoing condition-specific procedures or tests. The most common tests for both groups were urinalysis, urine culture, and cystoscopy, although cystoscopy was performed slightly more frequently in patients with IC/PBS than in those with CP/CPPS (33% vs 19%,  $P = .12$ ).

### Direct Costs

The direct costs for consumers of resources for the preceding 3 months are presented in Table 3. In the patients who incurred direct medical costs (34 patients with IC/PBS and 52 with CP/CPPS), the average cost for the

**Table 3.** Three-month costs for CP/CPPS and IC/PBS

Category	CP/CPPS-related Costs				IC/PBS-related Costs			
	Medication	Tests/ Procedures	Outpatient Visits	Total	Medication	Tests/ Procedures	Outpatient Visits	Total
Patients (n)	39 (63)	42 (68)	45 (73)	52 (84)	29 (67)	25 (58)	30 (70)	34 (79)
Medicare costs								
Mean	\$365	\$467	\$287	\$899	\$424	\$606	\$386	\$1148
Median	\$184	\$84	\$159	\$495	\$307	\$251	\$203	\$718
Total	\$14 225	\$19 629	\$12 905	\$46 759	\$12 307	\$15 149	\$11 573	\$39 029
Non-Medicare costs								
Mean	\$365	\$1424	\$605	\$1948	\$424	\$1578	\$798	\$2227
Median	\$184	\$385	\$308	\$912	\$307	\$665	\$466	\$1166
Total	\$14 225	\$59 806	\$27 245	\$101 276	\$12 307	\$39 456	\$23 947	\$75 710

Data in parentheses are percentages.

3-month period using Medicare rates was \$1148 per person for IC/PBS and \$899 for CP/CPPS. For all patients (those who did and did not incur costs), the direct medical costs averaged \$908 per person for IC/PBS and \$754 per person for CP/CPPS. The corresponding per person annualized costs were \$3631 for IC/PBS and \$3017 for CP/CPPS. If non-Medicare rates for outpatient visits and tests/procedures were used, the annual per person costs increased substantially to \$7043 for IC/PBS and \$6534 for CP/CPPS.

### Indirect Costs

In the preceding 3 months, 19% of those with IC/PBS and 28% of those with CP/CPPS reported lost wages totaling \$45 314 and \$50 343, respectively. This equates to an average yearly indirect cost of \$4216 per person for those with IC/PBS and \$3248 per person for those with CP/CPPS.

### Symptom Severity and Cost

The mean Interstitial Cystitis Symptom Index score for the IC/PBS group was 11.4, and 20 (47%) had severe symptoms (score  $\geq 12$ ). The mean direct cost (Medicare rates) for those with severe symptoms was \$1323 (SD \$1442) vs \$941 (SD \$921) for those with mild symptoms ( $P = .36$ ). The mean National Institutes of Health Chronic Prostatitis Symptom Index score in the CP/CPPS group was 17.76, and 32 (52%) had severe symptoms (score  $\geq 15$ ). The mean direct cost (Medicare rates) for those with severe symptoms was \$1056 (SD \$1412) vs \$701 (SD \$1030) for those with mild symptoms ( $P = .32$ ). For both conditions, increased symptom severity was associated with greater direct costs, although the differences did not reach statistical significance owing to the relatively small sample size.

### COMMENT

Approximately 80% of patients with either CP/CPPS or IC/PBS reported direct medical costs in the preceding 3 months that were attributed to their pelvic pain symptoms. The direct costs associated with IC/PBS were

slightly greater than those for CP/CPPS across all examined categories. Using Medicare rates, the mean yearly cost for IC/PBS was \$3631 per person and for CP/CPPS was \$3017 per person. However, the use of non-Medicare rates might more accurately reflect the true costs, given that a large proportion of these patients are  $<65$  years old. Using non-Medicare rates, the mean yearly per person costs for IC/PBS and CP/CPPS increased to \$7043 and \$6534, respectively. These costs are similar or greater than those reported for other chronic pain conditions such as peripheral neuropathy (\$1087), low back pain (\$4256), fibromyalgia (\$3784), and rheumatoid arthritis (\$6710)<sup>10-13</sup> (all costs adjusted to 2005 U.S. dollars).

Our costs for CP/CPPS were very similar to those reported in an established research cohort of patients with CP/CPPS,<sup>2</sup> in which the mean 3-month direct costs for consumers was \$954, and 26% of the men reported lost wages in the preceding 3 months. In our study, the corresponding values were \$899 and 28%. Both studies used Medicare cost data for the analyses. In contrast, Turner et al.<sup>3</sup> found a much lower cost associated with prostatitis in a health maintenance organization. In the study by Turner et al.,<sup>3</sup> the mean yearly prostatitis-related cost after an incident prostatitis diagnosis was only \$202. However, these patients were identified using a coded diagnosis of prostatitis in the medical record, which would be expected to yield a cohort with more mild and variable symptoms than the clinic-based cohort used in our study. In addition, the costs in their analysis were calculated using the costs to the health maintenance organization rather than Medicare-based rates. These methodologic differences likely account for the different cost estimates obtained.

Several investigators have used administrative claims data to estimate the costs associated with IC/PBS. Wu et al.<sup>1</sup> used data from several large fee-for-service managed care plans to identify 731 women with a diagnosis of IC. In that group of patients, the mean yearly cost was \$6813 compared with \$3493 for a group of age-matched controls. For the patients with IC, indirect costs accounted for 23.3% of the total costs. Clemens et al.<sup>4</sup> evaluated the costs for 239 women diagnosed with IC in the Kaiser

Permanente, Northwest managed care population. The mean yearly costs were 2.4-fold greater for those with IC than for the controls (\$7100 vs \$2994), and the median yearly costs were 3.8-fold greater (\$5000 vs \$1304). These cost differences were predominantly a result of outpatient and pharmacy expenses. Payne et al.<sup>5</sup> assessed claims data from 25 large employers, including 1.8 million covered lives, and found that the mean annual cost associated with IC in 2002 was \$8420 compared with \$4169 for those without IC. Although these studies confirm our findings that IC is associated with significant costs, methodologic differences preclude a detailed comparison between their results and ours.

Indirect costs are often overlooked when calculating the cost burden of chronic medical conditions. In our cohort, 1 in 5 patients with IC/PBS and 1 in 4 patients with CP/CPPS reported lost wages in the previous 3 months because of their symptoms. The annualized indirect costs from work loss were approximately equal to the direct costs attributed to IC/PBS and CP/CPPS. Additional costs related to lost productivity while at work were not quantified. These indirect costs have not only an individual economic impact, but also a societal impact in terms of lost productivity.

The present study had several limitations. First, the data were obtained from patients and not confirmed by medical record reviews and therefore could have been subject to recall bias. Second, our participants were recruited from a major academic referral center; therefore, the patients identified with IC/PBS and CP/CPPS might have had more severe symptoms than average individuals with these conditions. Third, these data only provide a cross-sectional analysis of the costs incurred by these patients. A more accurate assessment of the costs would require identification of newly diagnosed cases and prospective longitudinal follow-up, including the costs incurred before the diagnosis. Finally, the small sample size and limited minority representation could limit the ability to generalize these findings to the population at large.

Despite the limitations, the results of this study provide important information in an area with limited cost-related research. The results of our study show the economic impact of urologic pain conditions to be substantial and suggest that patients with these conditions have total healthcare costs

that are equal to or greater than those of patients with other chronic pain conditions.

## CONCLUSIONS

Both CP/CPPS and IC/PBS have substantial direct and indirect costs, with indirect costs accounting for a large proportion of the total. Regardless of the cost mechanism used (Medicare or non-Medicare), the direct costs of these conditions are greater than the mean yearly costs reported for many other chronic pain conditions. The substantial costs associated with CP/CPPS and IC/PBS support ongoing efforts to educate physicians about these conditions and to identify effective treatments.

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