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

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Keywords

costs; resource utilization; pelvic pain

INTRODUCTION

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 practices. Although these conditions are typically considered separate entities, there are actually many similarities between the two. Patients with these conditions typically complain of similar symptoms (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 via the formation of the Urologic Pelvic Pain Collaborative Research Network to study both conditions simultaneously (www.cceb.upenn.edu/uppcrn). Although the economic impact of the two conditions has been studied separately^{1–5}, no direct comparison of the costs associated with the two 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 utilizing identical methods.

MATERIALS AND METHODS

Subjects

The sample consisted of 43 women and 62 men from the Northwestern University outpatient urology clinic. Subjects were identified and recruited based on a physician diagnosis of IC/PBS in women, and CP/CPPS in men. Subjects were presented with a resource utilization questionnaire while waiting in the clinic or were mailed a questionnaire after being identified in the clinic setting. Institutional review board approval was obtained for the study.

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Note: Dr. Clemens performed this research while at Northwestern University

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Questionnaire content

The questionnaire included demographic information (age, race, education, annual household income, type of insurance), past medical history (queries about 28 different medical conditions, including those used for exclusion criteria), substance use (tobacco, alcohol, caffeine), and presence of a family history of IC/PBS and CP/CPPS. A resource utilization survey was developed to evaluate specific costs associated with pelvic pain or discomfort. Detailed information was recorded about hospital admissions, outpatient office visits (physician and non-physician), medication usage, laboratory tests/diagnostic procedures, telephone calls, and disease-related work absenteeism during the last 3 months. Symptom severity was assessed with the NIH Chronic Prostatitis Symptom Index (NIH-CPSI)⁶ and the Interstitial Cystitis Symptom Index (ICSI)⁷.

Determination of Costs

Outpatient visits and lab tests/procedures were converted into cost units with direct medical costs estimates based on hospital cost-accounting data (level 3 visit), the 2005 Physician Fee Schedule Book⁸, and average wholesale prices listed in the 2005 Redbook (Pharmacy Fundamental Reference Book)⁹. Costs incurred by each subject were calculated by multiplying each patient-reported unit of resource consumption by its corresponding cost. Medication cost were calculated based on patient reported dosage, number of doses taken per day, converted to cost per day and then multiplied by number of days taken over a 90 day period.

Direct costs were estimated utilizing two cost mechanisms: Medicare rates and Non-Medicare (ie, private insurance, managed care) reimbursement. Non-Medicare rates may provide a more realistic cost estimate for IC/PBS and CP/CPPS, as the majority of individuals diagnosed with the conditions are under the age of 65. Cost estimates using Medicare rates allow for comparisons across other studies which have utilized Medicare rates.

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

Symptom Severity and Cost

For IC/PBS, 'severe' symptoms were defined as a score of ≥ 12 on the ICSI (score range 0–20), and for CP/CPPS, 'severe' symptoms were defined as a score of ≥ 15 on the NIH-CPSI (score range 0–43). Mean direct costs were compared between the severe and mild groups for each condition.

Data analyses were performed using SPSS statistical package, version 12 (SPSS, Chicago, IL).

RESULTS

Demographics

Demographic characteristics are shown in Table 1. The mean age of the male and female cohorts was identical (51 years). The majority of subjects were Caucasian and college educated. Annual household income greater than \$50,000 was reported by 65% of the women and 73% of the men.

Utilization of Medical Services

A summary of outpatient visits and procedures related to IC/PBS and CP/CPPS for the preceding three months is provided in Table 2. Thirty (70%) of the women and 45 (73%) of

the men reported at least one outpatient visit related to IC/PBS or CP/CPPS, respectively. The distribution of specialist visits is quite similar. Urology appointments were most common, and were reported by 63% of women and 68% of men. Interestingly, 11% of men and 9% of women reported an emergency room visit in the preceding 3 months due to their pelvic pain symptoms.

Fully 58% of the IC/PBS subjects and 68% of the CP/CPPS subjects reported undergoing condition-specific procedures or tests. The most common tests in both groups were urinalysis, urine culture and cystoscopy, although cystoscopy was performed slightly more frequently in IC/PBS patients than in CP/CPPS patients (33% vs 19%, $p=0.12$).

Direct Costs

Direct costs for consumers of resources for the preceding three months are presented in Table 3. In the subjects who incurred direct medical costs (34 IC/PBS patients, 52 CP/CPPS patients), the average cost for the 3-month period using Medicare rates was \$1148 per person for IC/PBS and \$899 for CP/CPPS. For all patients (those that did and did not incur costs), direct medical costs averaged \$908 per person for IC/PBS and \$754 per person for CP/CPPS. Corresponding per person annualized costs are \$3631 for IC/PBS and \$3017 for CP/CPPS. If non-Medicare rates for outpatient visits and tests/procedures are used, the annual per person costs increase substantially to \$7043 for IC/PBS and \$6534 for CP/CPPS.

Indirect Costs

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

Symptom severity and cost

The mean ICSI score in the IC/PBS group was 11.4, and 20 (47%) had severe symptoms (score ≥ 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 ($p=0.36$). The mean NIH-CPSI score in the CP/CPPS group was 17.76, and 32 (52%) had severe symptoms (score ≥ 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 ($p=0.32$). For both conditions, increased symptom severity was associated with higher direct costs, although the differences did not reach statistical significance due to the relatively small sample size.

COMMENTS

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 higher 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, use of non-Medicare rates may more accurately reflect the true costs given that a large proportion of these patients are under age 65. Using non-Medicare rates, mean yearly per person costs for IC/PBS and CP/CPPS increase 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)¹⁰⁻¹³ (all costs adjusted to 2005 U.S. dollars).

Our costs for CP/CPPS are very similar to those reported in an established research cohort of CP/CPPS patients², in which the mean three-month direct costs for consumers was \$954, and 26% of the men reported lost wages in the preceding three months. In our study the

corresponding values were \$899 and 28%, respectively. Both studies utilized Medicare cost data for the analyses. In contrast, Turner et al found a much lower cost associated with prostatitis in a health maintenance organization (HMO)³. In the Turner study, the mean yearly prostatitis-related cost following an incident prostatitis diagnosis was only \$202. However, these patients were identified based on 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 in our study. In addition, the costs in the Turner analysis were calculated based on costs to the HMO rather than using Medicare-based rates. These methodological differences likely account for the different cost estimates obtained.

Several authors have used administrative claims data to estimate the costs associated with IC/PBS. Wu and coworkers used data from several large fee-for-service managed care plans to identify 731 women with a diagnosis of IC¹. In this group of patients, the mean yearly cost was \$6813, compared with \$3493 for a group of age-matched controls. In the IC patients, indirect costs accounted for 23.3% of total costs. Clemens et al evaluated the costs in 239 women diagnosed with IC in the Kaiser Permanente Northwest managed care population⁴. The mean yearly costs were 2.4-fold greater for the IC patients than for the controls (\$7100 versus \$2994), and the median yearly costs were 3.8-fold greater (\$5000 versus \$1304). These cost differences were predominantly due to outpatient and pharmacy expenses. Payne et al 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 vs. \$4169 for those without IC⁵. Although these studies confirm our findings that IC is associated with significant costs, methodological differences preclude a detailed comparison between these results and ours.

Indirect costs are often overlooked when calculating the cost burden of chronic medical conditions. In our cohort, 1 in 5 IC/PBS patients and 1 in 4 CP/CPPS patients reported lost wages in the past 3 months due to 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 both an individual economic impact but also a societal impact in terms of lost productivity.

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

Despite the limitations, this study provides 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 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 higher 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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Table 1
Demographic characteristics of study participants

Variable	IC/PBS	CP/CPPS
No. of participants	43	62
Mean age, range	51 (23 – 89)	51 (24–83)
White	88%	84%
College graduates	63%	77%
Income \geq \$50,000	42%	29%
Income \geq \$ 100,000	23%	45%

Table 2
Outpatient visits and procedures for preceding three months

	No. IC/PBS Patients (%)	No. CP/CPPS Patients (%)
Outpatient visits		
Urology	27 (63%)	42 (68%)
Gen. Practitioner	14 (33%)	21 (34%)
Pain Specialist	7 (16%)	6 (10%)
ER	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 MRI	4 (9%)	6 (10%)
Urodynamics	3 (7%)	3 (5%)
Transrectal ultrasonography		5 (8%)
Semen Analysis		5 (8%)
Other	5 (12%)	10 (16%)
Total	25 (58%)	42 (68%)

Table 3

Three-month costs for CP/CPPS and IC/PBS

Category	Three-Month CP/CPPS Related Costs				Three-Month IC/PBS Related Costs			
	Medications	Tests/Procedures	Outpatient Visits	Total	Medications	Tests/Procedures	Outpatient Visits	Total
No. Patients (%)	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
Sum	\$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
Sum	\$14,225	\$59,806	\$27,245	\$101,276	\$12,307	\$39,456	\$23,947	\$75,710