COST ESTIMATES OF CHRONIC CONSTIPATION IN CALIFORNIA MEDICAID (MEDI-CAL) PATIENTS

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ABSTRACT

INTRODUCTION: To characterize the health care expenditures associated with chronic constipation (CC) using a Medicaid database.

METHODS: Pharmacy and medical claims were retrospectively analyzed for California Medicaid (Medi-Cal) patients using the 20% sample from 1995 to 2003. CC was defined as: two or more diagnoses of constipation (ICD9 = 564.0, 564.00, 564.01, 564.09) at least 30 days apart; or a diagnosis and a constipation-related prescription more than 30 days after the diagnosis date. The annual prevalence of CC was calculated for the beneficiaries who were eligible for a whole year. For beneficiaries with eligibility 24 months prior to the observed initial diagnosis of constipation and 12 months after the diagnosis, itemized and total costs were calculated. Prescriptions and available over-the-counter agents (Rx/OTCs), outpatient care, inpatient care, and long-term care costs were compared before and after the diagnosis.

RESULTS: The annual CC incidence was estimated as 1.27% to 2.23% in 1995 to 2003, with increasing trends over time in the number of patients and rate. The population also decreased in age (64.8 to 55.7 years) and percent female (66% to 60%) over the study period. Average monthly costs for the CC cohort (n=7,463) by category before versus after diagnosis were: Rx/OTCs $173 vs. $255, a 47% increase; outpatient $349 vs. $508, a 46% increase; inpatient $293 vs. $392, a 34% increase; and long-term care $72 vs. $113, a 57% increase. There was a 43% increase in total costs after diagnosis, from $887 to $1,269. All before and after differences were significant at $P<0.01$. Outpatient costs represented the largest absolute increase.

CONCLUSIONS: There is a significant burden of chronic constipation in the Medi-Cal population. Prevalence may be underreported by ICD-9 coding, thereby underestimating costs. Increases in outpatient costs are a primary driver of total constipation costs.

COST ESTIMATES OF CHR IN CALIFORNIA MEDICAID

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INTRODUCTION

- Chronic constipation (CC) is a highly prevalent functional GI disorder estimated to affect up to 20% of the North American population.[1-2]
- Although not usually life-threatening, CC negatively affects health-related quality-of-life and imposes significant direct and indirect costs.[3-10]
- Understanding the costs of chronic constipation over time and throughout the healthcare system is important for evaluating effective cost containment strategies.
- While comprehensive data are available for other functional GI disorders, such as IBS[11-14] data are limited for chronic constipation[9-10, 15]
- The incremental cost of illness (COI) for CC can be reliably determined by comparing health resource utilization and healthcare costs in the time periods before versus after diagnosis.

Aim

- To characterize healthcare expenditures and epidemiological characteristics of individuals with chronic constipation using a Medicaid database.

METHODS

- A retrospective analysis was performed on cost and epidemiologic data extracted from a 20% sample of California Medicaid (Medi-Cal) pharmacy and medical claims.
- Pharmacy claims included OTC (over-the-counter) laxative products provided through Medi-Cal coverage.
- CC was defined according to either of the following criteria:
  1. Two or more diagnoses of constipation at least 30 days apart.
     - International Classification of Diseases-9 [ICD-9] codes:
       - 564.0 [Constipation]
       - 564.00 [Unspecified]
       - 564.01 [Slow Transit] and/or
       - 564.09 [Other Constipation];
  2. Constipation diagnosis and a constipation-related prescription > 30 days after the diagnosis date
     - Products with a Hierarchal Ingredient Code (HIC3) equal to:
       - Q3S or
       - D6S with American Hospital Formulary Service (AHFS) Therapeutic Class Code = 561200 (cathartics and laxatives).
- Epidemiologic trends of the CC cohort were analyzed. Specific outcome measures included:
  - Annual CC incidence (1995 to 2003)
  - Annual demographic statistics (age, sex) of CC cohort.
- For each subject, cost data were analyzed (1997 to 2003) during the:
  - 24 months prior to first CC diagnosis [pre-diagnosis] period and
  - 12 months after diagnosis [post-diagnosis] period.
- Itemized costs encompassed outpatient (including ED), inpatient, long-term care and prescription + over-the-counter (Rx/OTCs) costs.
- Annual incidence of CC was calculated for beneficiaries who were eligible for an entire year.
- Estimates of COI were conservatively calculated
  - Medicaid Unit costs for drugs were stable for the study period
  - Inflation adjustment was not applied to costs to avoid inflating small differences in early years
- All the costs were expressed as per member per month (PMPM).
- Because real dollar unit costs were multiplied for each year's utilization, inflation adjustment was not necessary for:
  - Inpatient costs ($1,000 per day) and
  - Long-Term Care (LTC) cost ($140 per day).
- Anonymity of person-level data was maintained according to the Health Insurance Portability and Accountability Act [HIPAA] guidelines.

Statistical Analysis

- Changes in outcomes from pre- to post-diagnosis periods were presented as differences in means.
- Tests for statistical differences were made using t-tests for continuous variables and chi-square (X^2) tests for categorical variables analyses.
- Differences were considered significant when $P \leq 0.05$
- All statistical tests were performed by STATA 8.2.

RESULTS

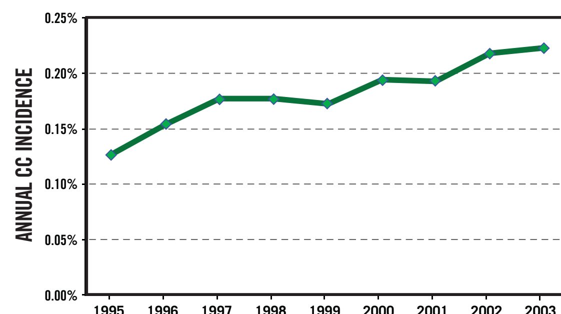
- A total of 23,753 subjects were identified in the Medi-Cal 20% sample for the years 1995-2003 with at least one diagnosis of constipation.
  - Differences in Medi-Cal eligibility requirements during the time period, resulted in the Medi-Cal population ranging from 726,767 to 979,401.
- From 1997-2002, a total of 7,463 subjects satisfied the definition for CC. **(Table 1)**

Table 1. Distribution of subjects meeting CC definition (1997-2002) within the 20% sample (N=7,463).

CC Diagnostic Criteria	% of population
2 Constipation Diagnoses	25.1%
3 Constipation Diagnoses	9.2%
> 3 Constipation Diagnoses	7.9%
Constipation diagnosis + separate drug record (≥ 30 days after diagnosis date)	57.8%
Total	100.0%

- Annual demographics (1997-2002) indicated:
  - The incidence of CC increased over the time period. **(Figure 1)**

Figure 1. Annual incidence of chronic constipation (Medi-Cal 20% sample) from 1995-2003.



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ONIC CONSTIPATION (MEDI-CAL) PATIENTS

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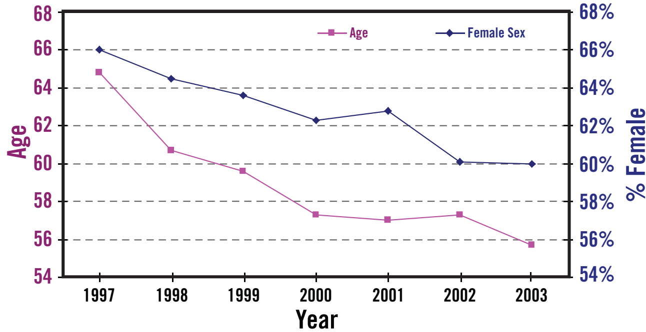
- Over the time period, the CC cohort's average age decreased (from 64.8 to 55.7 years) and decreased in the percentage female (from 66% to 60%). **(Figure 2)**

Figure 2. Annual demographics of CC population (Medi-Cal 20% sample) from 1997-2003.



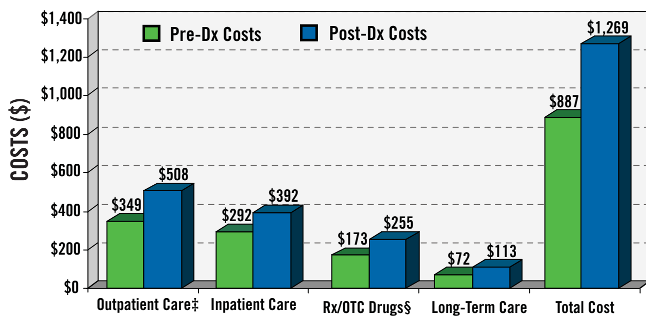
- Approximately one-third of the CC population was White (range 35.9% to 37.2%) and one-third was "Other" race category (range 40.1% to 32.9%). Hispanics comprised ~18% of the CC population (increasing from 14% to 20%) and Blacks ~11% (range 9.6% to 10.6%).
- Compared with the pre-diagnosis period, average PMPM costs for the CC cohort (N=7,463) increased significantly in all categories post-diagnosis (all $P<0.01$) **(Table 2 and Figure 3)**

Table 2. Average per member per month (PMPM) total and itemized costs of chronic constipation (1997-2002)

	CC Cohort Average PMPM			
Cost Category	Pre-Dx Costs (SD)	Post-Dx Costs (SD)	Δ	Adjusted Mean Cost
Outpatient Care†	$349 ($1,062)	$3508 ($1,256)	$159	46%
Inpatient Care	$292 ($862)	$255 ($1,256)	$100	34%
Rx/OTC Drugs‡	$173 ($290)	$25 ($398)	$82	47%
Long-Term Care	$72 ($618)	$113 ($784)	$41	57%
Total Cost	$887 ($1,721)	$1,269 ($2,686)	$382	43%

† Outpatient care includes Emergency Department visits.
‡ Rx/OTC drugs include prescription drugs and OTC drugs covered by Medi-Cal.
SD=Standard Deviation
All comparisons $P<0.01$

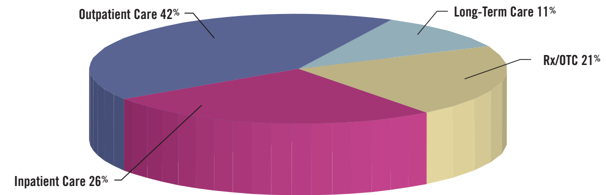
Figure 3. Average per member per month (PMPM) total and itemized costs of chronic constipation (1997-2002)† All cost comparisons $P<0.01$



† Some patients' outpatient claims data and Rx/OTC drug claims data from 2003 and 2004 appeared highly inflated. Consequently, Table 2 only summarizes the CC cohorts from 1997-2002. Number of CC cohort reflects abridged time period.
‡ Outpatient care includes Emergency Department visits.
§ Rx/OTC drugs include prescription drugs and OTC drugs covered by Medi-Cal

- Total costs increased 43% after diagnosis, from $887 to $1,269 ($P<0.01$).
- Outpatient care accounted for 42% ($159/$382) of the total cost increment. Together, the increase in outpatient and inpatient PMPM costs represented more than two-thirds of total incremental costs. **(Figure 4)**

Figure 4. Distribution of the $382 Increase in costs (After-Before) for chronic constipation.



SUMMARY AND CONCLUSIONS

- There is a significant burden of chronic constipation in the Medi-Cal population, with an increasing incidence over time.
- The age of initial diagnosis of chronic constipation is decreasing over time, and the characteristic pattern of CC as a female predominant disorder is becoming less pronounced in the Medi-Cal population.
- Total PMPM costs increase significantly in the Medi-Cal population (>40%) following chronic constipation diagnosis.
- Individuals with chronic constipation incur significantly higher PMPM costs across every point-of-service after CC diagnosis.
- Increases in outpatient costs are a primary driver of total constipation costs, and represent the largest contributor to incremental costs.
- Prevalence of chronic constipation may be underreported by ICD-9 coding, thereby underestimating costs.
- There is an opportunity for improved management of patients with constipation, which may result in reduced costs from a societal perspective.

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