Constipation in a Medicaid population:

Trends in prevalence, age, gender, and costs in the 12 months after diagnosis from 1997 to 2002 using a random sample of California Medicaid (Medi-Cal) data

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ABSTRACT

Backgound: Chronic constipation (CC) may be more common among females and in certain socioeconomic groups. Although the Medicaid population is more likely to be at greater risk, little is known about the burden of CC among Medicaid beneficiaries.

Objective: To assess the prevalence of CC by gender and age among the California Medicaid (Medi-Cal) population, explore the demographics by gender and age, and examine the cost trends for newly diagnosed patients in the year following diagnosis.

Methods: A retrospective study using a random 20% sample of Medi-Cal population from 1995 to 2003 was performed. CC was defined as two or more constipation diagnoses (ICD9 codes 564.0, 564.00, 564.01, 564.09) or a diagnosis and a claim for a constipation-related prescription more than 30 days after the diagnosis date. The annual prevalence of CC was calculated for beneficiaries who were eligible for a whole year. The average age and percent female were also calculated. Costs per patient for one year after the initial diagnosis (no previous diagnosis for 24 months) were calculated from paid claims in total and for the following categories: outpatient care (OUT); inpatient care (IN); prescriptions plus available over-the-counter agents (Drug); and long-term care (LTC).

Results: The annual CC prevalence rate increased from 1.77% (13,633 patients are projected to have CC) in 1997 to 2.18% (20,975 patients with CC) in 2002. Over the same time period, the mean age of CC patients decreased from 64.8 to 55.7 years and the gender composition decreased from 66% female to 60% female. Changes in CC costs per patient from 1997 to 2002 by category: OUT increased 247% from $4,995 to $12,338; IN decreased 29% from $5,864 to $4,177; Drug increased 266% from $1,926 to $5,116; LTC changes varied by year. There was a 156% increase in total costs from $14,487 in 1997 to $22,947 in 2002.

Conclusion: There is a significant burden of constipation in the Medi-Cal population. The prevalence rate increased overall from 1997 to 2002 and each year from 1999 to 2002. Prevalence is likely underreported due to limitations in coding methodology. The total costs per newly diagnosed patient also increased over this time frame. The burden of illness for chronic constipation appears to be steadily rising.

Year	Prevalence	OUT	IN	Drug	LTC	Total Cost
1997	1.77%	$4,995	$5,864	$1,926	$1,702	$14,487
1998	1.77%	$5,573	$4,844	$2,407	$ 801	$13,625
1999	1.73%	$5,456	$3,948	$3,149	$1,085	$13,638
2000	1.94%	$6,304	$4,084	$3,800	$1,379	$15,566
2001	1.93%	$6,770	$4,611	$4,382	$1,403	$17,167
2002	2.18%	$12,338	$4,177	$5,116	$1,316	$22,947

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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]
- Although not usually life-threatening, CC negatively affects health-related quality-of-life and is associated with significant direct and indirect costs.[1-6]
- Understanding the costs of CC over time and throughout the healthcare system is important for evaluating cost containment strategies.
- While comprehensive data are available for other functional GI disorders such as IBS,[7-9] limited data exist for chronic constipation.[6,10]

Aim

- To characterize healthcare expenditures and epidemiological characteristics of individuals with CC over time using a Medicaid database.

Methods

- A retrospective analysis was performed on cost and epidemiologic data extracted from 10 years of California Medicaid (Medi-Cal) pharmacy and medical claims (1995-2003) using a randomly selected 20% sample.
- Study was reviewed by the institutional review board for human protections and anonymity of person-level data was maintained according to the Health Insurance Portability and Accountability Act guidelines.
- CC was defined according to either of the following criteria:
  - 2 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
      - 564.09 [Other Constipation]; OR
  - 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).
- For beneficiaries who were eligible for Medi-Cal for an entire year, the protocol examined:
  - Annual CC incidence; and
  - Annual demographic statistics (age, sex) of CC cohort.
- For each CC subject, an index date was defined as the date of their first claim for CC.
- For non-CC Controls, the index date was based on the average index date of the CC cohort, by year.
- CC subjects were newly diagnosed (i.e. no diagnoses in the 24 months prior to their index date) and had continuous data for at least 12 months after their diagnosis.
- Non-Constipation Controls were matched (5:1) to each CC subject based on age, gender, and institutionalization status (Yes/No) and had at least 36 months of data (24 months pre-index date and 12 months post-index date).
- Cost outcomes were calculated for one (1) year after their index dates for the following categories:
  - Outpatient (including Emergency Department);
  - Inpatient;
  - Long-term care; and
  - Drug [Prescription and over-the-counter (Rx/OTC) agent] costs.
- Results are presented for total costs, by category, and by percentage of total.
- Incremental costs (CC cohort minus Control cohort) for each year were also calculated.
- Cohorts are reported over multiple timeframes due to inclusion criteria and time required post-index date for different analyses.

Statistical Analysis

- Mean annual costs between the CC and Control cohorts were compared using student *t*-tests.
- Statistical significance was defined as $P \leq 0.05$.

Results

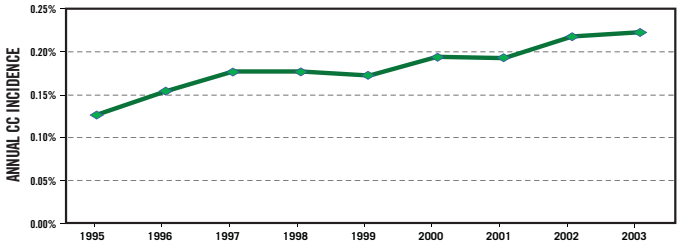
- A total of 23,753 subjects were identified in the Medi-Cal 20% sample for the years 1995-2003 with at least one diagnosis of constipation.
- From 1997-2003, a total of 9,201 subjects satisfied the definition for CC. **(Table 1)**
  - Differences in Medi-Cal eligibility requirements during the time period resulted in the population ranging from 726,767 to 979,401.

Table 1. Distribution of subjects with chronic constipation (1997-2003).

CC Diagnostic Criteria	N
2 Constipation diagnoses	2,372
3 Constipation diagnoses	928
> 3 Constipation diagnoses	929
Constipation diagnosis + separate drug record (≥30 days after diagnosis date)	4,972
Total	9,201

- The following trends were detected:
  - From 1995 to 2003 **(Figure 1)**, the annual incidence of CC ranged from 1.27% to 2.23%, with increasing trends over time in the number of patients and rate of CC.

Figure 1. Annual Incidence of chronic constipation (Medi-Cal 20% sample) from 1995-2004.



  - From 1997 to 2003, both cohorts:
    - Decreased in mean age from 64.8 to 55.7 years **(Figure 2)**
    - Decreased in the prevalence of females from 66% to 60% **(Figure 3)**
  - From 1997 to 2002:

Figure 2. Annual Age at Index Date of CC and Matched Control Cohort population (Medi-Cal 20% sample) from 1997-2003.

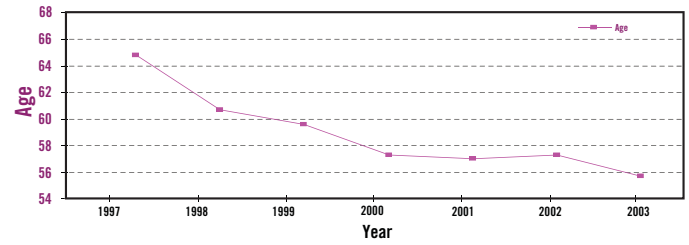
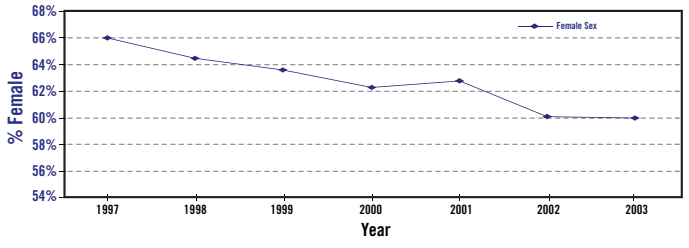


Figure 3. Annual Gender Composition (% Female) of CC and Matched Control Cohort population (Medi-Cal 20% sample) from 1997-2003.



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- There was an overall increase in mean annual costs for the CC cohort from $14,487 to $22,947 **(Table 2)**.

Table 2. Annual Costs by Category (US Dollars).

Year	N		Outpatient Care		Inpatient Care		Drugs		Long-Term Care		Total Cost	
	CC	Control	CC	Control	CC	Control	CC	Control	CC	Control	CC	Control
1997	1,976	9,877	$4,995	$453	$5,864	$556	$1,926	$196	$1,702	$590	$14,487	$1,794
1998	1,598	7,985	$5,573	$36	$4,844	$392	$2,407	$203	$801	$349	$13,625	$1,302
1999	1,621	8,100	$5,456	$365	$3,948	$243	$3,149	$253	$1,085	$503	$13,638	$1,365
2000	1,725	8,606	$6,304	$324	$4,084	$232	$3,800	$310	$1,379	$459	$15,566	$1,324
2001	1,758	8,770	$6,770	$331	$4,611	$214	$4,382	$339	$1,403	$435	$17,167	$1,319
2002	1,510	7,546	$12,338	$383	$4,177	$216	$5,116	$364	$1,316	$299	$22,947	$1,262

All comparisons between cohorts are statistically significant (P≤0.02).

- There was an overall increase in mean annual incremental (CC cohort minus Control cohort) costs from $12,693 to $21,685 **(Figure 4)**.
- The average difference between CC and Controls cost was +$13,785
- The percent of mean annual costs by category for the CC cohort varied over the time period **(Figure 5)**. The following shifts were largest in scope:
  - Away from inpatient care from 40.5% to 18.2%;
  - Toward outpatient care from 34.5% to 53.8%; and
  - Toward prescription and over-the-counter agent use from 13.3% to 22.3%.

Figure 4. Incremental (CC minus Control Cohort) Mean Annual Costs by Category (in US Dollars).

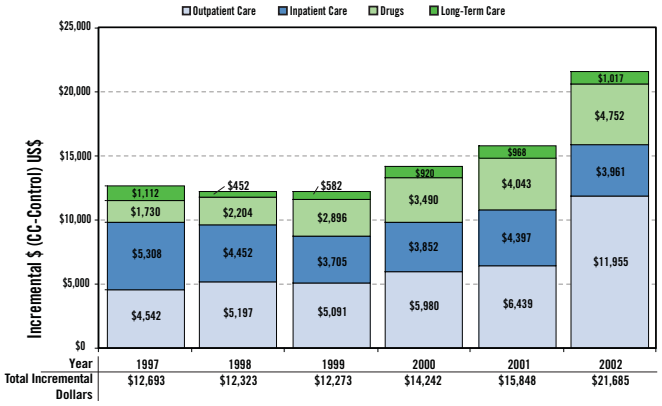
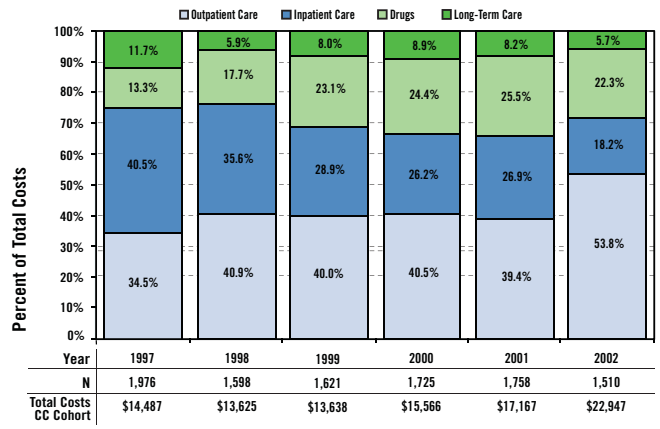


Figure 5. Percentage of Annual Costs by Category for the CC Cohort.



All comparisons between cohorts are statistically significant (P≤0.02).

Summary and Conclusions

- There is a significant burden of CC in the Medi-Cal population, with an increasing incidence over time.
  - The incremental mean cost (CC cohort minus Control cohort) was at least $12,273 annually.
- The age of initial diagnosis of CC is decreasing over time, and the characteristic pattern of CC as a predominantly female disorder is becoming less pronounced in the Medi-Cal population.
- Prevalence of CC 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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