4. Results

Patient Characteristics

The median age for chronic HCV-only patients (49 years) was 2 years more than that of co-infected patients (47 years). Nearly half of the sample size was between 25 and 34 years.

Nearly 78% of co-infected patients were male, compared with 60% of chronic HCV-only patients.

The common types of insurance plans among the study population were health maintenance organizations and preferred provider organizations. Patients were predominantly from the Northeast region.

The average baseline Charlson Comorbidity Index score was 0.62 for chronic HCV-only patients and 0.52 for co-infected patients. Note the index score calculation excluded HIV AIDS as this was a baseline measure.

4.2 Objective

To analyze retrospective insurance claims in order to assess resource use and costs among managed care enrollees with chronic HCV and HCV co-infected compared to those with chronic HCV alone.

3. Methods

Study Design
The study involved a retrospective analysis of longitudinal insurance claims from a large United States health plan.

Data Source
The data source was the Integrated Health Care Information Services (IHCIS) database containing medical, outpatient, physician, and ancillary claims data from a national sample of 50 managed care health plans covering approximately 50 million lives from 1997 to 2006. We used the 5 most recent years (2002-2006) of data for our analysis.

Inclusion Criteria
Criteria for inclusion in the study were as follows:

Primary or Non-primary Diagnosis of Chronic HCV (International Classification of Diseases, Ninth Revision, Clinical Modification [ICD-9-CM] codes 070.44, 070.40, 070.4, 070.70, or 070.71) or HIV (ICD-9-CM code 042)

Patients were classified into two mutually exclusive groups:

- Chronic HCV alone without HIV or HBV (N = 27,976)
- Chronic HCV and HIV co-infected without HBV (N = 400)

An index date was set as the date of first observed chronic HCV diagnosis or the date of diagnosis of co-infection.

Continuous plan enrollment for at least 3 months prior to and at least 12 months following the first observed diagnosis (index date).

Mean per-incident use and costs were calculated using all medical and pharmacy services utilized assessed over 12 months post-index date.

Outcome Measures
Outcome measures analyzed included the following:

- Demographic characteristics of patients diagnosed with HCV alone and patients diagnosed with HCV and HIV co-infection
- Per-incident utilization and charges per all medical and pharmacy encounters during a period of 12 months following patients’ index diagnosis, stratified by the following cost categories:
  - Inpatient stays
  - Skilled nursing facility stays
  - Emergency department visits
  - Outpatient visits
  - Skilled medical and home health visits
  - Outpatient or ancillary care
  - Laboratory tests
  - Prescriptions
  - Total health care utilization

Rate of Health Care Utilization

- Co-infected patients had a slightly higher rate of hospital admission (27%), compared with patients with chronic HCV alone (24%; P = 0.030)
- Patients with chronic HCV and HIV co-infection had higher rates of prescription use, compared with patients with chronic HCV alone (95% vs. 90%; P = 0.0001)
- A larger percentage of patients with chronic HCV alone had physician office visits (58% vs. 50%; P < 0.001) and laboratory tests (80% vs. 77%; P = 0.043), compared with co-infected patients
- There were no significant differences in emergency department visits or in home health visits between the two groups

Table 1. Characteristics of the Study Sample

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Chronic HCV Only (N=27,976)</th>
<th>Chronic HCV + HIV (N=400)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total health care utilization (SD)</td>
<td>16,444 (827)</td>
<td>782 (775)</td>
</tr>
<tr>
<td>Mean (SD)</td>
<td>16,444 (827)</td>
<td>782 (775)</td>
</tr>
<tr>
<td>Range (minimum, maximum)</td>
<td>49 (17)</td>
<td>47 (17)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Mean (SD)</th>
<th>Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>49 (17)</td>
<td>47 (17)</td>
</tr>
<tr>
<td>Gender (%)</td>
<td>60.27</td>
<td>77.75</td>
</tr>
<tr>
<td>Race (%)</td>
<td>86.00</td>
<td>90.00</td>
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<tr>
<td>Education (%)</td>
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<tr>
<td>Income (%)</td>
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<tr>
<td>Employment (%)</td>
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<tr>
<td>Marital Status (%)</td>
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<tr>
<td>Employment Status (%)</td>
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<td>Employment Status (%)</td>
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</tbody>
</table>

Health Care Utilization and Costs

- Patients with HCV alone had 61 encounters and total costs of $20,258 compared with 90 encounters and total costs of $44,626 for co-infected patients (P < 0.0001)
- Prescription costs for co-infected patients were three times that of patients with HCV alone.
- Co-infected patients also had more laboratory test encounters (24 vs. 15; P < 0.0001) and higher costs ($1,206 vs. $737, P < 0.0001), compared with patients with HCV alone.
- Hospitalization rates were similar across the groups, but co-infected patients insured slightly higher inpatient costs (not significant).
- After controlling for demographics and comorbidities, we found the following: Co-infected patients had greater resource utilization and costs in all service sectors. The largest differences in costs were on prescription use, co-infected patients had greater costs.
- Total health care costs for co-infected patients were $24,929 more than for patients with HCV alone.

Total health care costs for co-infected patients were $24,929 more than for patients with chronic HCV alone.

5. Limitations

- Patients were identified from ICD-9-CM diagnosis codes that, if recorded inaccurately, may have caused some patients to be incorrectly identified as having HCV and/or HIV. The validity of the results therefore depends on the accuracy of record keeping among providers submitting claims in the IHCIS database.
- The analysis period covers only 12 months. Both chronic HCV and HIV are likely to have cost implications to third-party payers across several years. Therefore, an analysis that spans multiple years would be ideal for estimating the long-term cost implications with HCV alone.
- The study focused on direct costs incurred by commercial health plans. It did not address costs incurred by other third-party payers (e.g., Medicaid, Medicare) or the broader societal costs of HCV and HIV, including lost productivity due to workplace absence.

6. Conclusions

- Chronic HCV and HIV co-infection leads to substantial consumption of health care resources.
- Co-infection with HIV can cost health care more than twice that of chronic HCV alone.

References


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