

Health Care Utilization and Associated Costs of Hepatitis A in Adults in a US Commercially Insured Population

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ABSTRACT

OBJECTIVE: To examine the impact of acute hepatitis A on health care utilization and cost in a commercially insured population.

STUDY DESIGN: This observational, retrospective cohort study used medical and pharmacy claims data from January 1, 2004 through October 31, 2009. A matched control group consisted of patients without hepatitis A during the study period. Descriptive statistics were used to assess differences between hepatitis A patients (cases) and controls.

RESULTS: The case and control groups each contained 2331 patients. In the 12-month post-index period, 482 (20.7%) cases and 193 (8.3%; $P < .0001$) controls had inpatient (INP) hospitalizations (adjusted mean estimated costs [AMEC] \$4433 and \$1244 [$P < .0001$], respectively). Emergency department (ED) services occurred in 382 (16.4%) cases, versus 277 (11.9%; $P < .0001$) controls (AMEC \$225 and \$132 [$P < .0001$], respectively). The mean number of outpatient services (OUT) for cases was 21.5 (± 22.1) versus 14.7 (± 18.2) for controls, with AMEC \$4132 and \$2092, respectively. The mean number of physician visits was 9.1 (± 9.9) and 5.5 (± 7.4) for each group, respectively [AMEC \$1025 vs. \$577; $P < .0001$]. There were 20.13 (± 24.1) and 19.37 (± 24.5) pharmacy claims, with AMEC \$1565 and \$1115 ($P < .0001$), in cases and controls, respectively. Adjusted mean total estimated associated costs were \$11,479 and \$5323 ($P < .0001$), respectively. Multivariate regression results demonstrated that patients with hepatitis A have higher total medical costs even after adjusting for age, sex, comorbidities, pre-index cost, and hepatitis A vaccination.

CONCLUSIONS: Patients with hepatitis A had significantly higher health care resource utilization and costs during the 1-year post-index period, compared with controls.

KEYWORDS: Administrative claims data; Burden of illness; Hepatitis A

Hepatitis A virus infection, which is vaccine preventable, is one of the more common causes of symptomatic acute viral hepatitis, as it can be transmitted not only by contaminated food or water, but also by close personal contact.¹ The course of infection with hepatitis A virus begins with the ingestion of virus, followed by replication within the liver, excretion via bile, and shedding in stool.^{2,3} The time of heaviest viral shedding occurs about 2 weeks before the onset of jaundice or other symptoms.² Infections in young children are typically asymptomatic or mild.^{2,3} In adolescents and adults, hepatitis A infection is characterized by the onset of symptoms about 28 days after initial exposure, including nausea, vomiting, dark urine and stool, joint pain, loss of appetite, anorexia, fever, malaise, abdominal pain, and jaundice.⁴ According to the World Health Organization, there are an estimated 1.5 million cases of hepatitis A per year worldwide.⁵ Since the licensure of hepatitis A vaccines in 1995, followed by Advisory Committee on Immunization Practices recommendations for vaccination, the incidence of hepatitis A cases has been on a steady decline, from a peak of 14 cases per 100,000 population in 1990 in the US,⁶ to a low of 1.9 cases per 100,000 in 2004.⁷ In the US, with hepatitis A endemicity rates as low as 0.9 cases per 100,000 population in 2008, the combined direct and indirect medical costs may still exceed \$488.8 million per year.^{3,8} Yet the societal cost of this disease may be underreported.⁹

A recent review of 13 articles assessing the economic impact of hepatitis A outbreaks demonstrated that the cost ranged from \$140,000 to \$36 million per year.¹⁰ The wide ranges in costs for hepatitis A outbreaks are due primarily to differences in the size of the estimated at-risk population. Outbreak control measures, including postexposure prophylaxis, are among the most costly operations, and the scale-up costs from small to large outbreaks almost never have a directly proportional relationship.¹⁰ Per-case costs were also variable.¹⁰ In one study in particular, disease control costs of \$689,314 were reported and included \$450,397 for 16,293 immune globulin shots and \$105,699 for 2777 hours devoted to the outbreak by health care workers. Medical costs of \$46,064 accounted for 7% of the overall disease control costs.⁸

Costs associated with hepatitis A include the direct (including medical, pharmacy, and laboratory expenses), and indirect costs (including lost work productivity, absenteeism, caregiver costs, housekeeping costs).⁸ While the literature clearly demonstrates high direct and indirect costs associated with outbreaks of hepatitis A, no research has been conducted retrospectively in a commercially insured population where sporadic cases, in addition to potential outbreaks of the disease, may occur.⁸ There are no published studies examining the impact of hepatitis A diagnosis on subsequent annual health care utilization and costs in this population. The current study assessed the economic burden 1 year following diagnosis of hepatitis A in a large managed-care population for the purpose of quantifying the direct medical economic burden of hepatitis A cases to health plans and individuals. The clinical and demographic characteristics of the patient population, health care utilization including inpatient admissions (INP), emergency department (ED) visits, outpatient services (OUT), physician office visits (OV), and pharmacy claims, and the associated costs are presented. This research brings value to the body of literature in helping to inform health care policy decision-makers, especially those who are assessing the value of encouraging hepatitis A vaccination programs among health plan members.

METHODS

Data Source

This was a matched, observational, retrospective cohort study using medical and pharmacy administrative claims data from the HealthCore Integrated Research Database (HIRDSM) from January 1, 2004 through October 31, 2009. The HIRD data environment includes linked medical, pharmacy, and eligibility data from 14 health plans in the US and includes health maintenance, point-of-service, preferred provider organizations, and indemnity plans located in the northeastern, southeastern, mid-Atlantic, midwestern, and western regions of the US. The HIRD currently includes information on approximately 35 million lives. All data from this study were handled in compliance with the Health Insurance Portability and

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