

Medicare Hepatitis C Patients: Are patients under 65 different?

Meckley LM, Wang Z, Miyasato G, Scaife J, Sanchez H
Trinity Partners, LLC, 230 Third Avenue, Waltham, MA, USA

Background

- Approximately 3.2 million people in the US are infected with chronic hepatitis C virus (HCV)¹
- 12% of chronic HCV patients are insured via Medicare²
- Medicare eligibility is conferred to US residents on the basis of age (65+), disability or ESRD³
- In 2011, approximately 82% of Medicare patients were eligible based on age, 17% due to disability and ~1% due to ESRD⁴
- Disabled Medicare patients under age 65 typically have severe limitations that impact activities of daily living or mental disorders, and approximately 43% are eligible for both Medicaid and Medicare⁵
- HCV Medicare patients are an unusual population because the majority of these Medicare beneficiaries are aged ≤ 65⁶

Objectives

- To assess how Medicare HCV patients under age 65 differ from patients over 65
- To assess whether age influences the cost of care for Medicare HCV patients

Methods

Data source: 2010-2011 Centers for Medicare and Medicaid Services Parts A and B fee-for-service claims

Population: Medicare patients with HCV

HCV is defined by the presence of one of the following ICD-9 codes: 070.44, 070.54, 070.70, 070.71, V02.62

Index date is defined as first occurrence of HCV between 2010-2011

Inclusion: ≥ 6 months of follow-up post index date

Exclusion: Enrolled in HMO

Outcomes of interest:

- Costs (measured in 2011 dollars)
- Hospitalizations
- ER visits

Covariates of interest:

- Demographics
- Comorbidities (6 months prior to index date)
- Charlson Comorbidity Index (CCI)
- Dual eligible Medicare/Medicaid status
- Original reason for Medicare entitlement (OREC) (to assess whether patients that are over age 65 originally qualified for Medicare due to age, disability or ESRD)

Analysis:

- Descriptive statistics for total all-cause costs, hospitalizations, emergency department visits, comorbidities, Medicare and Medicaid eligibility characteristics for patient age 65+ and <65
 - All outcomes evaluated for the 6 months following index
- The impact of age on 6 month medical costs adjusting for demographics, OREC, Medicaid status, and overall health status (measured by CCI) was assessed using generalized linear models fit with a gamma distribution and log link function
 - Patients with no costs were excluded from this analysis

Results

- 16,451 HCV patients with complete data were identified
- Patients under 65 were more likely to have an OREC of disability (89%), while patients 65+ OREC was primarily due to old age and survivors insurance (80%)
- Medicaid dual-eligibility was twice as common among younger patients

Table 1. Patient Characteristics

Demographics N and %	Age<65 N=11,312		Age 65+ N=5,139		p-value
Age	Mean and 95% CI		Mean and 95% CI		-
Age	51.91	51.8-52.1	72.69	72.5-72.9	
Gender	n	%	n	%	<0.01
Male	7,071	62.5%	2,442	47.5%	
Female	4,241	37.5%	2,697	52.5%	
Race*					<0.01
Asian	130	1.2%	346	6.7%	
Black	2,706	24.0%	1,072	20.9%	
Hispanic	475	4.2%	202	3.9%	
Native American	147	1.3%	28	0.5%	
Other	123	1.1%	129	2.5%	
White	7,705	68.3%	3,354	65.4%	
Region*					<0.01
MidWest	2,106	18.6%	864	16.8%	
Northeast	2,252	19.9%	1,056	20.6%	
Other	23	0.2%	30	0.6%	
South	4,515	39.9%	1,847	36.0%	
West	2,413	21.3%	1,339	26.1%	
Original Reason for Enrollment (OREC)					<0.01
Age or Survivors Benefit	249	2.2%	4,094	79.7%	
ESRD	451	4.0%	44	0.9%	
Disability	10,063	89.0%	958	18.6%	
Both Disability and ESRD	549	4.9%	43	0.8%	
Dual Medicare/Medicaid Eligible					<0.01
Dual Eligible	7,533	66.6%	1,901	37.0%	
Medicare only	3,779	33.4%	3,228	63.0%	

* Missing values for this characteristic

- Younger patients had a higher prevalence of alcoholism and drug abuse, comorbidities that are also risk factors for HCV
- Younger patients were more likely to have HIV, anxiety and depression than older patients
- Cardiovascular comorbidities were more common among older patients, which mirrors the prevalence of those comorbidities in the general Medicare population
- In contrast, overall health, as measured by CCI, was higher for younger patients (1.82 vs. 2.51, p<0.01)

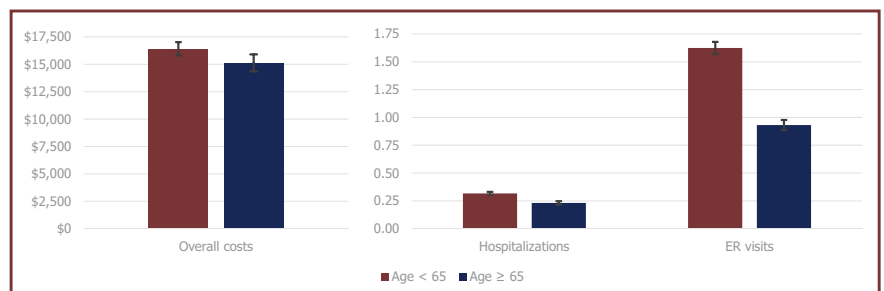
Results (cont'd)

Table 2. Patient Comorbidities within 6 Months of Index Date

Comorbidities	Age<65 N=11,312		Age 65+ N=5,139		p-value
	n	%	n	%	
Psychiatric					
Alcohol abuse	4025	35.6%	1573	30.6%	<0.01
Anxiety	2373	21.0%	496	9.7%	<0.01
Depression	3720	32.9%	848	16.5%	<0.01
Drug abuse	4903	43.3%	627	12.2%	<0.01
Nervousness	26	0.2%	7	0.1%	<0.01
Renal					
Anemia	1872	17.0%	1151	22.0%	<0.01
Chronic kidney disease (CKD)	1921	17.0%	1121	21.8%	<0.01
End stage renal disease (ESRD)	1276	11.3%	521	10.1%	0.03
Viral					
HIV	1037	9.2%	99	1.9%	<0.01
Hepatitis B Virus (HBV)	407	3.6%	248	4.8%	<0.01
Cardiovascular					
Coronary heart disease (CHD)	2015	17.8%	1739	33.8%	<0.01
Congestive heart failure (CHF)	1450	12.8%	1177	22.9%	<0.01
Hypertension	6763	59.8%	4148	80.7%	<0.01
Pulmonary					
Asthma	1593	14.1%	559	10.9%	<0.01
COPD	2271	20.1%	1006	19.6%	0.46
Pulmonary fibrosis	188	1.7%	156	3.0%	<0.01
Other					
Retinopathy	918	8.1%	617	12.0%	<0.01
Type 2 diabetes	3405	30.1%	2055	40.0%	<0.01
Hyperlipidemia	4329	38.3%	2981	58.0%	<0.01
Advanced liver disease					
Decompensated cirrhosis	1717	15.2%	827	16.1%	0.13
Hepatocellular carcinoma	208	1.8%	214	4.2%	<0.01
Liver transplant	344	3.0%	116	2.3%	<0.01

- Younger patients had more hospitalizations and emergency department visits
- 6-month all-cause medical costs for patients age<65 were \$1,285 higher than those 65+

Figure 1. All-Cause Costs, Hospitalizations and ER Visits by Age



- Unadjusted results for the GEE model found age, OREC, multiple comorbidities, Medicaid status, Race and Gender were associated with all-cause cost
- After adjusting for OREC, HCV-related comorbidities, CCI, and demographics, age and Medicaid status were no longer associated with all-cause cost
- The factor that most influenced all-cause cost was OREC—for average patients, those who qualified for Medicare due to ESRD had costs that were \$27,580 (95% CI \$22,879, \$32,899) higher than those who qualified for Medicare due to old age, after controlling for age, HCV-related comorbidities, CCI, demographics, and Medicaid status

Table 3. Factors Associated with Costs: Adjusted GEE Coefficients

Variable Category	Level	Cost Ratio*	95% CI	p-value
Age Group	Age 65+	0.99	(0.92, 1.07)	0.87
Original reason for Medicare Benefit Reference= Old Age and Survivor's Benefit	Disability	1.15	(1.06, 1.24)	
	ESRD (with or without Disability)	2.65	(2.37, 2.97)	<0.01
Medicaid (Dual Eligible)		1.04	(0.99, 1.09)	0.09
CCI Score		1.30	(1.29, 1.32)	<0.01
Advanced Liver Disease		1.37	(1.29, 1.45)	<0.01
Alcohol Abuse		0.93	(0.89, 0.98)	<0.01
Drug Abuse		1.20	(1.14, 1.25)	<0.01
Race Reference=White	Asian	0.86	(0.76, 0.97)	
	Black	1.10	(1.04, 1.15)	
	Hispanic	0.94	(0.85, 1.05)	<0.01
	Native American	1.05	(0.87, 1.29)	
	Other	0.88	(0.75, 1.04)	
Gender	Female	0.84	(0.81, 0.88)	<0.01

*Cost ratio represents the ratio of patients with that value of covariate compared to the reference group. Average all-cause cost per patient calculated from the model was \$16,700

Conclusions

- Medicare HCV patients under 65 are more expensive to treat
- However, this appears to be due to higher rates of disability, ESRD and comorbidities, rather than age itself

Implications

- Younger HCV patients may benefit from programs designed to manage their comorbidities and reduce drug and alcohol abuse
- Younger HCV patients will remain more costly to treat even before treatment costs for newer HCV medications are included
- Medicare should prepare for a high cost burden as these younger HCV patients age

References

1. Department of Health and Human Services. Centers for Disease Control and Prevention. Division of Viral Hepatitis. Hepatitis C General Information. 2010; <http://www.cdc.gov/hepatitis/hcv/pdfs/hepgeneralfact-sheet.pdf>. Accessed May 19, 2014.
2. Scaife J, Kuri E, Acampa L, et al. Uninsured Chronic Hepatitis C Patients And Their Cost Implications Under The Affordable Care Act. Value in Health : The Journal of the International Society for Pharmacoeconomics and Outcomes Research. 2013;16(3):A88.
3. Centers for Medicare & Medicaid Services. Original Medicare (Part A and B) Eligibility and Enrollment 2012; <http://www.cms.gov/Medicare/Eligibility-and-Enrollment/OrigMedicarePartABEligEnrol>. Accessed May 19, 2014.
4. Centers for Medicare & Medicaid Services. CMS Data Compendium, 2011 Edition. 2011; http://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/DataCompendium/2011_Data_Compendium.html. Accessed May 19, 2014.
5. Folate SM, Hojan C. Disability Profile And Health Care Costs Of Medicare Beneficiaries Under Age Sixty-Five. Health Affairs. November 1 2001;20(6):242-253.
6. Scaife J, Kuri E, Acampa L, et al. Prevalence Of Hepatic Outcomes Among Medicare Beneficiaries Diagnosed With Chronic Hepatitis C Virus. Value in Health : The Journal of the International Society for Pharmacoeconomics and Outcomes Research. 2013;16(3):A82.