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What are we waiting for? Delays in HCV therapy after prescription

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INTRODUCTION

- Dramatic improvements in safety, tolerability, and efficacy have been demonstrated with modern HCV therapy, though cost has increased substantially.
- Overall cost-benefit analyses favor treatment of HCV with DAA agents because cost is offset by reduced progression to liver failure and decreases in hospitalization and liver transplant.[1,2]
- Success rates with DAA agents are so high that warehousing may no longer be beneficial, nor ethical.[3]
- DAA therapies can alter the course of the HCV epidemic using treatment as prevention. [4,5]
- Delays in therapy due to insurance approval and reimbursement processes constitutes an important obstacle to therapy.

METHODS

- Retrospective cohort study to compare time from prescription to drug delivery between January 1, 2014 and March 1, 2016.
- The EMR of the GI and ID clinics was queried for all patients with a diagnosis of HCV by ICD 9 or 10 coding.
- Patients were not included if they did not receive therapy or if dates could not be accurately obtained.
- Time to treatment is defined as the number of days between recorded prescription of medication and the patient receiving delivery of the medication.
- Mean time to treatment values and significance for the entire were calculated by Kaplan-Meier.
- Variables achieving a significance $p<0.20$ were included in a Cox regression model.

RESULTS

- Mean time to treatment for the study population is 32.62 days (range 2-180, SD=32.21).
- Multiple factors significantly affect time to treatment (Table 2).
- Private insurance, denial of first prescription, drug other than ledipasvir/sofosbuvir, presence of liver disease, and GI office setting were associated with delayed drug delivery in multivariate model (Table 3).

Table 1. Sociodemographic and clinical characteristics.

		Total (N, %)		GI office (n, %)	ID office (n, %)	X^2 *p*-value
Age (years)	Less than 50	48 (26.7)		18 (22.8)	30 (29.7)	0.30
	50 and above	132 (73.3)		61 (77.2)	71 (70.3)	
Gender	Female	64 (36.0)		29 (37.7)	35 (34.7)	0.68
	Male	114 (64.0)		48 (62.3)	66 (64.4)	
Race	Non-white	75 (41.9)		27 (34.2)	48 (48.0)	0.06
	White	104 (58.1)		52 (65.8)	52 (52.0)	
HIV infection	Yes	36 (24.5)		3 (5.1)	33 (37.5)	<0.001
	No	111 (75.5)		56 (94.9)	55 (62.5)	
Office Setting	Gastroenterology	79 (43.9)				
	Infectious Diseases	101 (56.1)				
Referral Source	Internal	112 (62.6)		55 (69.6)	57 (57.0)	0.08
	External	67 (37.4)		24 (30.4)	43 (43.0)	
Child-Pugh Score	A	166 (92.2)		68 (87.2)	98 (99.0)	0.001
	B	11 (6.1)		10 (12.8)	1 (1.0)	
Substance use	Yes	108 (63.5)		41 (56.2)	67 (69.1)	0.08
	No	62 (36.5)		32 (43.8)	30 (30.9)	
Insurance	Public	153 (85.0)		63 (79.7)	90 (89.1)	0.08
	Private	27 (15.0)		16 (20.3)	11 (10.9)	
Regimen	Ledipasvir/Sofosbuvir	119 (66.1)		41 (51.9)	78 (77.2)	<0.001
	Daclatasvir/Sofosbuvir	12 (6.7)		4 (5.1)	8 (7.9)	
	Paritaprevir/Ritonavir/ Ombitasvir/Dasabuvir	5 (2.8)		3 (3.8)	2 (2.0)	
	Other	44 (24.4)		31 (39.2)	13 (12.9)	

Table 2. Time to treatment.

Characteristics	Subgroup	Time to treatment in days (SE, 95% CI)	p-value
Office Setting	Gastroenterology	42.0 (4.95, 32.2-51.7)	0.003
	Infectious Diseases	25.8 (2.02, 21.8-29.7)	
Referral Source	Internal	36.6 (3.57, 29.6-43.6)	0.04
	External	26.2 (2.74, 20.8-31.5)	
Genotype	1a or 1b	35.0 (3.05, 29.0-41.0)	0.03
	2, 3, or 4	21.9 (1.72, 18.5-25.3)	
Insurance	Public	27.9 (2.25, 23.4-32.3)	<0.001
	Private	59.0 (8.74, 41.8-76.1)	
Approval of first requested regimen	Approved	28.8 (2.22, 24.4-33.1)	<0.001
	Denied	91.4 (11.21, 69.4-113.3)	

Figure 1a. Kaplan Meier plot comparing office setting.

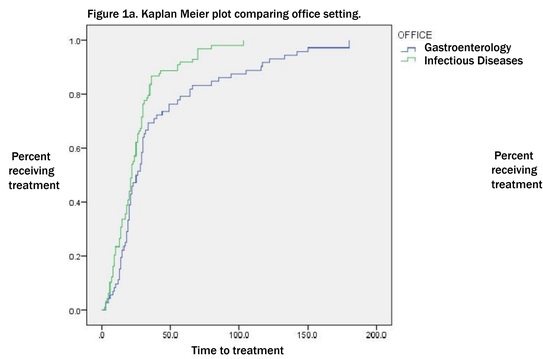

Figure 1b. Kaplan Meier plot comparing insurance payer.

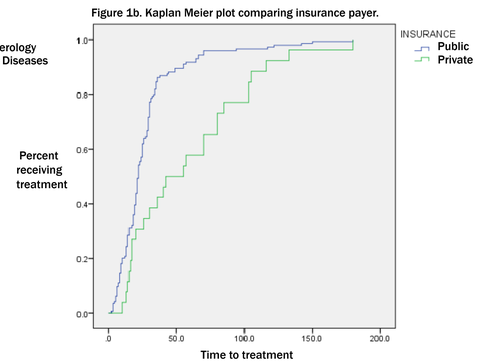

Table 3. Cox Regression analysis of clinical characteristics

	Adjusted Hazard Ratio (95% CI)	*p*-value
Age (≥50yo v. <50yo)	1.07 (0.88-1.29)	0.50
Race (white v. non-white)	1.13 (0.80-1.59)	0.40
Office setting (ID v. GI)	1.69 (1.12-2.54)	0.01
Other liver disease (yes v. no)	0.42 (0.18-0.96)	0.05
Child-Pugh score (B v. A)	0.82 (0.42-1.59)	0.56
Regimen Requested		0.02
- LDV/SOF	reference	n/a
- DCV/SOF	0.64 (0.39-1.05)	0.08
- PROD	0.37 (0.18-0.76)	0.007
- Other	0.43 (0.17-1.12)	0.09
Approval (no v. yes)	0.41 (0.21-0.84)	0.01
Insurance (private v. public)	0.54 (0.33-0.89)	0.01
Referral source (external v. internal)	1.25 (0.86-1.80)	0.24
Genotype (II,III,IV v. I)	1.17 (0.66-2.07)	0.59

LIMITATIONS

- Our study reflects a limited geographical region.
- The studied population is limited to the outpatient setting and no patients had decompensated cirrhosis.
- Our institution's GI and ID office have significant differences in population characteristics.
- This study is not designed to capture delays in detection, referral, or decision to treat.

CONCLUSIONS

- The mean time from prescription to delivery was greater than 1 month.
- Connecticut public insurance rules allow for faster therapy.
- Presence of liver disease unexpectedly prolongs time to treatment.
- HIV infection was not a statistically significant factor.
- A multidisciplinary approach may facilitate more rapid approval and access to direct-acting antiviral therapy.

ABBREVIATED REFERENCES

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