Research Poster Session 5, PIN20

Societal Productivity Gains From New Therapies in Hepatitis C

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Background

- Several studies have investigated the cost-effectiveness of the new direct acting antiviral (DAA) hepatitis C treatments from the perspective of healthcare. However, their effect on wider societal costs remain relatively unexplored [1, 2].
- **Objective:** To investigate real-word data to examine differences in work absence between newer and older treatment regimes for hepatitis C.

Patients and methods

- By use of retrospective register-based data, three historical cohorts of patients in the Region Stockholm in Sweden receiving different treatment regimes for hepatitis C were identified.
- Cohort 1 and 2 were identified using the National Prescribed Drug Register and the National Patient Register to confirm a diagnosis of hepatitis C.
- Cohort 3 was based on the national quality register for hepatitis C (InfCare Hepatitis C).
- By the unique personal identification of the patients of working age (19-67 year of a), treatment records were matched with data on sick leave (≥14 days of absence) and disability pension from the Swedish Social Insurance Agency in Sweden.
- Both sick leave and disability pension can be full time (100%) or part time (eg 25%, 50% , 75%). The number of days with part-time compensation was adjusted to days of full compensation.
- Using each patient as his or her own control, we calculated the difference between the number of days away from work in the year prior to treatment initiation and the year following start of treatment.
- To formally test for differences between the treatment groups while adjusting for population characteristics, we conducted a difference-in-difference regression with age and sex as covariates.

Results

- The three cohorts consisted of 1,511, 199 and 2,303 patients, respectively (Table 1).
- Patients in cohort 1 were marginally younger and contained more women compare to patients in cohort 2 and 3.
- Cohort 2 included a much smaller number of patients compared to the other cohorts since the drugs received by this patient group were on the market only for a short time before being replace by more efficient drugs.
- In the year prior to treatment, a somewhat larger proportion received either sick leave/disability pension in cohort 1 compared to the more recent cohorts.
- The mean number of days away from work during the year preceding treatment ranged from 85 in cohort 2 to 106 in cohort 1, with cohort 3 in between with 94 days.
- After treatment start, there was a marked increase in the number of days away from work in cohort 1 and 2 (42 and 60 additional days respectively). No such change was observed in cohort 3.
- The increase was driven by an increase in sick-leave, while disability pension was unchanged. The difference-in-difference model confirms these results (Table 2).
- Adjustments for age and sex had limited effect on these results.

Conclusion

- Fewer days off work was observed for patients undergoing treatment with the newer antiretroviral drugs, potentially driven by a more beneficial side effect profile.
- This is an important aspect to consider when evaluating the value of these drugs.

Results - Tables

Table 1. Patient characteristics, days of work in the year prior to and the year following treatment initiation.

	Cohort 1	Cohort 2	Cohort 3
Years of inclusion	2005-2011	2011-2013	2014-2018
Treatments included	Ribavirin, Peginterferonalfa-2a, Peginterferon alfa-2b	Telaprevir, Boceprevir Ribavirin, Peginterferon alfa-2a, Peginterferon alfa-2b	Current generation of DAAs
N	1,511	199	2,303
Women, n (%)	583 (38.6)	65 (32.7)	805 (34.9)
Mean age (sd)	48.5 (10.1)	52.3 (9.5)	51.0 (10.9)

DAA = direct acting antiviral, sd = standard deviation, Diff. = difference

Table 2. Results from difference-in-difference regressions on the number of days away from work du to sick-leave (SL) or disability pension (DP) in the year following treatment.

Variables	**(1) SL (unadjusted)**	**(2) SL (adjusted)**	**(3) DP (unadjusted)**	**(4) DP (adjusted)**
Year after start of treatment	41.18***	41.18***	2.42	2.42
	(35.36 - 47.01)	(35.37 - 47.00)	(-7.54 - 12.38)	(-7.34 - 12.19)
Cohort 2[1]	1.29	1.24	-22.45**	-32.53***
	(-10.78 - 13.36)	(-10.82 - 13.31)	(-43.10 - -1.81)	(-52.80 - -12.26)
Cohort 3[1]	-6.67**	-6.73**	-5.27	-11.92***
	(-11.97 - -1.37)	(-12.04 - -1.43)	(-14.33 - 3.80)	(-20.83 - -3.00)
Year after start * cohort 2[1]	19.00**	19.00**	-3.54	-3.54
	(1.93 - 36.07)	(1.96 - 36.03)	(-32.73 - 25.66)	(-32.16 - 25.08)
Year after start * cohort 3[1]	-42.38***	-42.38***	-7.41	-7.41
	(-49.88 - -34.89)	(-49.86 - -34.91)	(-20.23 - 5.41)	(-19.97 - 5.15)
Age		0.18**		2.62***
		(0.01 - 0.35)		(2.34 - 2.91)
Women		10.39***		-2.55
		(6.67 - 14.10)		(-8.79 - 3.69)
Observations	8,026	8,026	8,026	8,026
R-squared	0.06	0.06	0.00	0.04

SL=Sick leave, DP=Disability pension, Confidence interval in parentheses, *** p<0.01, ** p<0.05, * p<0.1,

[1]Cohort 1 used as reference

References

1. Frisk P et al. Eur J Clin Pharmacol. 2018;74(7):971-8.
2. Liang TJ et al. N Engl J Med. 2013;368(20):1907-17.

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