

CHAPTER 10

Hepatitis on Dialysis

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SECTION A : HEPATITIS ON DIALYSIS

Prevalence of Hepatitis B was quite similar between HD and PD patients, and remains low annually. The prevalence of Hepatitis C in HD patients continues to decline annually. This implies that dialysis facilities around the country have been consistent with maintaining stringent infection control measures to prevent new HCV seroconversions.

Table 10.1: Prevalence of positive HBsAg and positive Anti-HCV at annual survey, HD patients 2000-2009

Year	No. of subjects	Prevalence of HBsAg+ (%)	Prevalence of Anti-HCV+ (%)
2000	4386	6	25
2001	5187	6	23
2002	6106	5	20
2003	6977	5	19
2004	7618	5	17
2005	8957	4	14
2006	11295	5	12
2007	12496	5	11
2008	14900	4	9
2009	16947	4	8

Table 10.2: Prevalence of positive HBsAg and positive Anti-HCV at annual survey, PD patients 2000-2009

Year	No. of subjects	Prevalence of HBsAg+ (%)	Prevalence of Anti-HCV+ (%)
2000	662	2	5
2001	781	2	3
2002	891	3	4
2003	1223	3	4
2004	1200	4	5
2005	1318	4	5
2006	1494	5	4
2007	1731	5	4
2008	2017	4	3
2009	2141	4	3

SECTION B : HEPATITIS B

There was larger center to center variation among HD compared to PD centers in terms of the proportion of Hepatitis B patients. This is probably due to the fact that Hepatitis B patients tend to be segregated to the larger HD centers as some smaller centers may practice the policy of not accepting Hepatitis B patients.

Table 10.3: Variation in Proportion of patients with positive HBsAg at annual survey among HD centres, 2009

Year	No. of centres	Min	5th Centile	LQ	Median	UQ	95th Centile	Max
2000	106	0	0	0	4	9	14	80
2001	126	0	0	0	5	9	15	90
2002	154	0	0	0	3	8	14	26
2003	181	0	0	0	3	8	15	67
2004	206	0	0	0	3	7	15	92
2005	235	0	0	0	2	7	15	100
2006	289	0	0	0	0	6	16	94
2007	314	0	0	0	0	6	15	100
2008	359	0	0	0	0	6	13	95
2009	389	0	0	0	0	5	13	92

Figure 10.3: Variation in Proportion of patients with positive HBsAg among HD centres, 2009

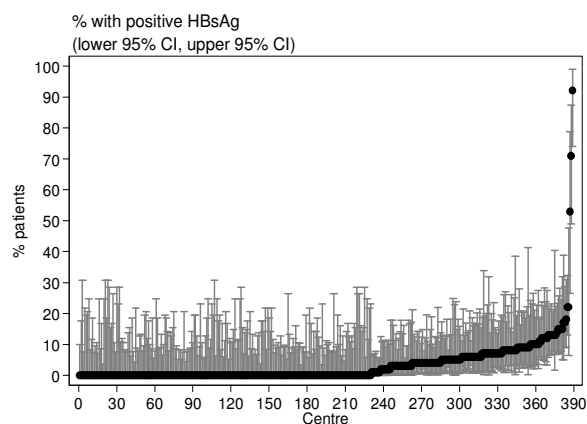


Figure 10.4: Variation in Proportion of patients with positive HBsAg among PD centres, 2009

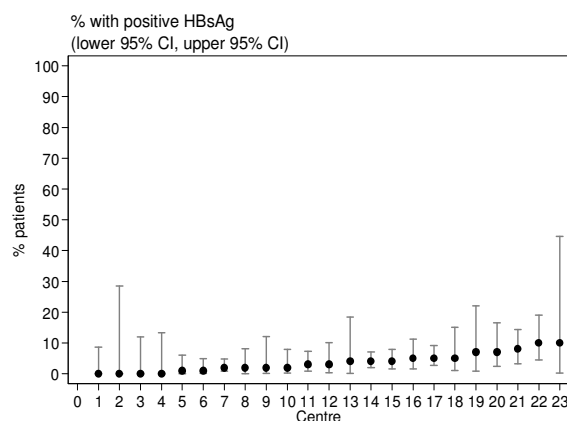


Table 10.4: Variation in Proportion of patients with positive HBsAg at annual survey among PD centres, 2009

Year	No. of centres	Min	5th Centile	LQ	Median	UQ	95th Centile	Max
2000	11	0	0	0	1	4	5	5
2001	12	0	0	0	2	3	9	9
2002	15	0	0	1	3	6	18	18
2003	18	0	0	2	4	6	8	8
2004	18	0	0	1	3	5	11	11
2005	19	0	0	1	3	5	10	10
2006	22	0	0	2	4	6	9	13
2007	23	0	0	0	4	6	7	11
2008	23	0	0	1	3	6	10	13
2009	23	0	0	1	3	5	10	10

SECTION C : HEPATITIS C

Despite the annual decline in the median proportion of HCV infected HD patients, there still remains a wide center to center variation in its prevalence. This reflects the diversities in infection control protocols among centers. There should be regular audits to ensure standardization and consistent implementation of stringent infection control protocols to further reduce the incidence of new HCV seroconversion.

Table 10.5: Variation in Proportion of patients with positive anti-HCV at annual survey among HD centres, 2000-2009

Year	No. of centre	Min	5th centile	LQ	Median	UQ	95th centile	Max
2000	106	0	0	9	18.5	31	67	90
2001	126	0	0	7	17	30	65	89
2002	154	0	0	5	14	26	58	96
2003	181	0	0	5	14	25	50	92
2004	208	0	0	4	11	25	50	100
2005	237	0	0	2	10	21	40	96
2006	288	0	0	0	8	17	42	98
2007	313	0	0	0	7	14	35	100
2008	358	0	0	0	5	12	32	100
2009	388	0	0	0	3	10	27	98

Figure 10.5: Variation in Proportion of patients with positive anti-HCV among HD centres, 2009

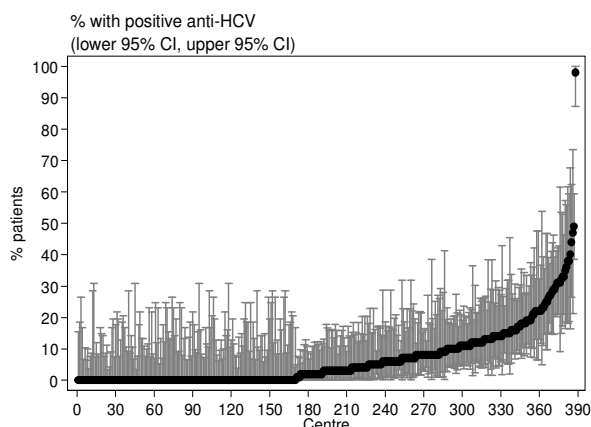


Figure 10.6: Variation in Proportion of patients with positive anti-HCV among PD centres, 2009

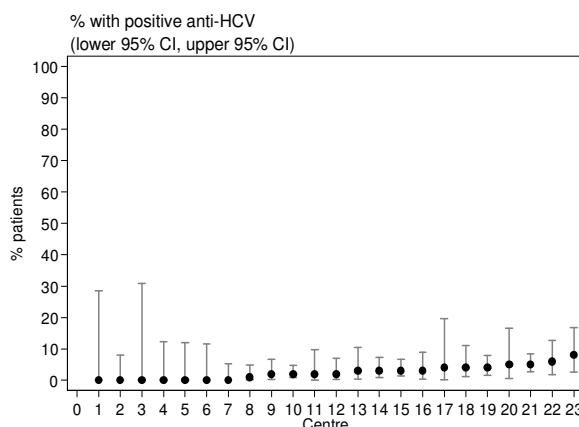


Table 10.6: Variation in Proportion of patients with positive anti-HCV at annual survey among PD centres, 2000-2009

Year	No. of centre	Min	5th centile	LQ	Median	UQ	95th centile	Max
2000	11	0	0	2	3	8	10	10
2001	12	0	0	0	3	4	7	7
2002	15	0	0	0	3	8	11	11
2003	18	0	0	1	4.5	7	9	9
2004	18	0	0	1	4.5	7	10	10
2005	19	0	0	2	4	8	10	10
2006	22	0	0	1	2.5	6	8	11
2007	23	0	0	0	2	6	8	9
2008	23	0	0	0	3	4	5	9
2009	23	0	0	0	2	4	6	8

Risk factors for HCV sero-conversion were previous renal transplant and a history of blood transfusion. There was also a trend of increasing risk with men and younger patients. Completely assisted HD patients had a lower risk, and interestingly, diabetics and older patients had lower sero-conversion risks. Completely assisted patients are fully assisted by trained staff who tend to be more stringent with infection control measures. These patients also tend to be older and may have more co-morbidities such as diabetes, and as such may explain why there is a lower tendency to acquire HCV infection among the older and diabetic patients.

Table 10.7(a): Risk factors in relation to HD practices for seroconversion to anti-HCV positive among sero-negative patients

Risk factor	Number of patients	Risk Ratio	95% CI	p-value
Assistance to Perform HD:				
Self care ^(ref*)	163	1.00		
Partial self care	129	0.74	(0.59; 0.94)	0.013
Completely assisted	361	0.45	(0.39; 0.57)	0.000
Dialyzer Reuse:				
less than 10 ^(ref*)	299	1.00		
more than 10	391	0.93	(0.80; 1.08)	0.340
Dialyzer Reprocessing System:				
Fully Auto ^(ref*)	383	1.00		
Semi Auto	45	0.83	(0.61; 1.14)	0.248
Manual	35	0.87	(0.61; 1.23)	0.434
Age:				
<=20 ^(ref*)	35	1.00		
21-40	247	0.90	(0.63; 1.30)	0.588
(41-60)	320	0.44	(0.31; 0.63)	0.000
>60	102	0.20	(0.13; 0.29)	0.000
Gender:				
Female ^(ref*)	280	1.00		
Male	410	1.13	(0.97; 1.32)	0.109
Diabetes:				
No ^(ref*)	495	1.00		
Yes	195	0.37	(0.32; 0.44)	0.000
Previous Renal Transplant::				
No ^(ref*)	586	1.00		
Yes	104	4.67	(3.76; 5.81)	0.000
History of Blood Transfusion:				
No ^(ref*)	384	1.00		
Yes	306	1.38	(1.19; 1.61)	0.000

Risk factors for HCV sero-conversion among PD patients are previous renal transplant, blood transfusion and modality switch from HD to PD. Similar to HD, there was also a trend for increased risk of sero-conversion in younger patients. This finding may imply other factors which may contribute to the increased risk, such as sexual promiscuity and use of recreational drugs.

Table 10.7 (b): Risk factors for seroconversion to anti-HCV positive among sero-negative patients in PD

Risk factor	Number of patients	Risk Ratio	95% CI	p-value
Age:				
<=20 (ref*)	4	1.00		
21-40	14	2.24	(0.74; 6.84)	0.157
41-60	31	2.37	(0.83; 6.74)	0.106
>60	3	0.34	(0.08; 1.52)	0.157
Gender:				
Female (ref*)	28	1.00		
Male	24	0.86	(0.49; 1.48)	0.577
Diabetes:				
No (ref*)	45	1.00		
Yes	7	0.18	(0.08; 0.39)	0.000
Switch from HD to PD:				
No (ref*)	30	1.00		
Yes	22	7.73	(4.42; 13.52)	0.000
Previous Renal Transplant::				
No (ref*)	47	1.00		
Yes	5	1.83	(0.72; 4.66)	0.020
History of Blood Transfusion:				
No (ref*)	23	1.00		
Yes	29	1.93	(1.11; 3.31)	0.019

Conclusion

Nosocomial transmission in HD has been implicated for the higher HCV prevalence in HD compared to PD. Though there is a consistent annual decline, the wide center variation in HD still exists for HCV infection. There is still room for improvement and for this, a nationwide audit looking specifically into aspects of our current HD practices will be useful to identify areas which will require change in order to further reduce the risk of HCV sero-conversion among HD patients.