

Online Supplement

The Influence of Provider Connectedness on Continuity of Care and Hospital Readmissions in Patients With COPD: A Claims Data-Based Social Network Study

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Table S1, Results of the regression analyses regarding the SECON index

	SECON	
	β	CI
Constant	-0.091	-0.197 - 0.015
Patient characteristics		
Sex (ref: male)	-0.026	-0.062 - 0.009
Asthma-COPD-overlap (ref: no)	-0.059 **	-0.100 - -0.019
Nursing home (ref: no)	-0.154 ***	-0.238 - -0.069
Severity (ref: mild COPD)		
moderate COPD	-0.031	-0.120 - 0.058
severe COPD	-0.037	-0.125 - 0.050
very severe COPD	-0.004	-0.089 - 0.081
COPD, severity unspecified	-0.023	-0.106 - 0.060
Age	0.058 ***	0.039 - 0.077
Number of hospital stays in the previous year	-0.024 *	-0.042 - -0.006
Number of contacts with the usual provider in the year after discharge	0.196 ***	0.177 - 0.215
Charlson Comorbidity Index	-0.047 ***	-0.067 - -0.028
Length of index stay	-0.001	-0.019 - 0.017
Share of physician contacts that are with a specialist	-0.510 ***	-0.529 - -0.491
GP characteristics		
Area (ref: rural)	0.046 *	0.002 - 0.090
Sex (ref: male)	-0.035	-0.082 - 0.012
DMP (ref: no)	-0.109 **	-0.188 - -0.030
HZV (ref: no)	0.333 ***	0.280 - 0.386
Experience in practice in years	0.064 ***	0.042 - 0.086
Average number of patients	0.029	-0.004 - 0.062
Density	0.002	-0.033 - 0.037
Degree centrality	-0.023	-0.072 - 0.026
Closeness centrality	-0.029 *	-0.054 - -0.005
EI-index	0.037 *	0.004 - 0.071
cohesion	-0.007	-0.033 - 0.019
n (patients)	7294	
n (GPs)	3673	
ICC of the null model	0.25	

β = standardised coefficients, CI = confidence interval, DMP = disease management programme, HZV = strong primary care programme, GP = general practitioner, ICC = intraclass correlation coefficient, *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

Table S2. Results of the regression analyses regarding hospital readmission

	30 day readmission		90 day readmission		180 day readmission		365 day readmission	
	OR	CI	OR	CI	OR	CI	OR	CI
Constant	0.022 ***	0.010 - 0.046	0.027 ***	0.014 - 0.053	0.022 ***	0.011 - 0.044	0.070 ***	0.042 - 0.117
Patient characteristics								
Sex (female)	0.823	0.675 - 1.003	0.877	0.733 - 1.048	0.932	0.781 - 1.112	1.007	0.858 - 1.182
Nursing home (ref: no)	0.631	0.378 - 1.053	1.849 **	1.249 - 2.738	1.372	0.878 - 2.143	1.201	0.781 - 1.845
Asthma-COPD-overlap	1.125	0.901 - 1.405	1.071	0.874 - 1.312	0.987	0.806 - 1.207	1.005	0.838 - 1.205
Severity (ref: mild COPD)								
moderate COPD	1.814	0.984 - 3.344	1.278	0.705 - 2.315	2.784 **	1.453 - 5.335	2.285 ***	1.446 - 3.609
severe COPD	1.685	0.917 - 3.098	2.549 **	1.456 - 4.463	2.926 **	1.537 - 5.569	2.590 ***	1.649 - 4.069
very severe COPD	2.657 **	1.481 - 4.765	3.790 ***	2.190 - 6.559	6.814 ***	3.650 - 12.722	3.979 ***	2.549 - 6.213
COPD, severity unspecified	1.929 *	1.078 - 3.452	2.071 **	1.196 - 3.584	2.691 **	1.434 - 5.051	1.933 **	1.245 - 2.999
Age	0.882 *	0.794 - 0.981	0.92	0.835 - 1.015	0.925	0.841 - 1.018	1.041	0.955 - 1.135
Number of hospital stays in the previous year	1.462 ***	1.344 - 1.590	1.570 ***	1.440 - 1.713	1.453 ***	1.330 - 1.588	1.505 ***	1.373 - 1.651
Number of visits with the usual provider after discharge ^a			0.615 ***	0.544 - 0.695	0.558 ***	0.491 - 0.635	0.578 ***	0.513 - 0.651
Charlson Comorbidity Index	1.002	0.903 - 1.112	0.977	0.885 - 1.079	1.082	0.982 - 1.192	1.108 *	1.011 - 1.213
Length of the index stay	1.147 **	1.056 - 1.245	1.209 ***	1.118 - 1.309	1.124 **	1.035 - 1.222	0.971	0.886 - 1.064
SECON			1.121 *	1.008 - 1.246	1.080	0.974 - 1.197	1.161 **	1.051 - 1.282
Share of physician contacts that are with a specialist	0.886 *	0.794 - 0.988	1.094	0.989 - 1.209	1.035	0.939 - 1.139	1.142 **	1.043 - 1.251
GP characteristics								
Area (ref: rural)	1.052	0.843 - 1.312	1.079	0.892 - 1.305	1.032	0.859 - 1.241	0.863	0.728 - 1.021
Sex (ref: male)	1.008	0.796 - 1.276	1.028	0.840 - 1.258	1.108	0.913 - 1.345	0.993	0.829 - 1.188
DMP (ref: no)	1.011	0.676 - 1.513	1.15	0.801 - 1.652	1.173	0.827 - 1.665	1.175	0.867 - 1.591
HZV (ref: no)	1.068	0.819 - 1.392	1.293 *	1.026 - 1.629	1.371 **	1.099 - 1.712	1.071	0.876 - 1.309
Experience in practice	1.051	0.943 - 1.171	1.015	0.925 - 1.114	1.058	0.967 - 1.156	1.023	0.942 - 1.111
Average number of patients	0.904	0.770 - 1.061	1.005	0.878 - 1.151	1.006	0.887 - 1.141	1.022	0.907 - 1.151
Density	0.982	0.825 - 1.168	0.811 **	0.697 - 0.942	0.928	0.803 - 1.072	1.002	0.876 - 1.145
Degree Centrality	1.257 *	1.001 - 1.579	0.839	0.684 - 1.030	0.951	0.792 - 1.141	0.899	0.756 - 1.069
Closeness centrality	0.978	0.865 - 1.105	1.016	0.914 - 1.130	1.015	0.917 - 1.123	1.077	0.982 - 1.181
EI-index	1.250 **	1.055 - 1.481	1.031	0.894 - 1.188	1.008	0.883 - 1.152	0.900	0.797 - 1.016
Cohesion	1	0.879 - 1.138	0.979	0.876 - 1.093	0.952	0.856 - 1.058	0.920	0.836 - 1.014
n patients)	7294		6328		5639		4872	
n (GPs)	3673		3413		3224		2978	
ICC of the null model	0.35		0/ NA		0/ NA		0.01	

OR = odds ratio, CI = confidence interval, DMP = disease management programme, HZV = strong primary care programme, GP = general practitioner, ICC = intraclass correlation coefficient, in the respective time frame or until readmission, *** p < 0.001, ** p < 0.01, * p < 0.05