

# **SUPPLEMENTAL MATERIAL**

**Table S1. Codes.**

<b>Variable</b>	<b>Source/format</b>	<b>Look-back</b>	<b>Inclusion codes</b>	<b>Exclusion codes</b>
<b>Study population (ICD-10 codes)</b>				
Any influenza or pneumonia	DNPR/ICD-10		J09-J18, A481, B012, A709	
Influenza	DNPR/ICD-10		J09, J10	
Pneumonia with bacterial or unspecified pathogen	DNPR/ICD-10		J13, J14, J157, J159, J180, J181, J182, J189, A481	
<b>Main exposures (ATC codes)</b>				
ACE-Is	NPD/ATC	90d	C09A, C09B	
ARBs	NPD/ATC	90d	C09C, C09D	
Calcium channel blockers (CCB)	NPD/ATC	90d	C07FB, C08CA, C09BB, C09DB, C09DX01	
<b>Outcomes</b>				
ICU admission	DNPR/Procedure		NABE, NABB	
Mechanical ventilation	DNPR/Procedure		BGDA0	
Non-invasive ventilation	DNPR/Procedure		BGDA1	
Treatment with inotropes/vasopressors	DNPR/Procedure		BFHC92A, BFHC92B, BFHC92C, BFHC92D, BFHC92E, BFHC93A, BFHC93B, BFHC93C, BFHC95	
Dialysis-treated acute kidney injury (“acute dialysis”)	DNPR/Procedure		BJFD0	
Death	CPR/status			
<b>Covariates</b>				
Age	CPR			
Sex	CPR			
<b>Coexisting conditions</b>				
Hospital-diagnosed hypertension	DNPR/ICD-10	10y	I10, I15	
Diagnosed stable angina pectoris	DNPR/ICD-10	10y	I20, I251, I259	I21, I22, I23, I200
Myocardial infarction	DNPR/ICD-10	10y	I21, I22, I23	
Heart failure	DNPR/ICD-10	10y	I50	
Stroke	DNPR/ICD-10	10y	I60, I61, I63, I64	
Atrial fibrillation/flutter	DNPR/ICD-10	10y	I48	
Heart valve disease	DNPR/ICD-10	10y	I05, I06, I07, I08, I09.8, I34-I37, I39, I51.1A, Q22, Q23	
Venous thromboembolism	DNPR/ICD-10	10y	I26, I801, I802, I803	

Variable	Source/format	Look-back	Inclusion codes	Exclusion codes
Diabetes	DNPR/ICD-10	10y	E10, E11, E12, E13, E14, O24, G63.2, H360, N083	O24.4
	NPD/ATC	10y	A10A, A10B	
Chronic pulmonary disease	DNPR/ICD-10	10y	J40, J41-J44, J45-J47, J60-J67, J68.4, J70.1, J70.3, J84.1, J92.0, J96.1, J98.2, J98.3	
Renal disease	DNPR/ICD-10	10y	I12, I13, N00-N05, N07, N11, N14, N18-N19, Q61, N08, E102, E112, E142	
End-stage renal disease (kidney transplant or dialysis)	DNPR/Procedure	10y	BJFD2	
	DNPR/Surgery	10y	KKAS	
	DNPR/ICD-10	10y	T861, Z940	
Liver disease	DNPR/ICD-10	10y	B18, B150, B160, B162, B190, I85, K70, K71, K72, K73, K74, K760, K76.6	
Dementia	DNPR/ICD-10	10y	DF00, DF01, DF02, DF03, DG30, DG310B, DG311, DG318, DG319	
	NPD/ATC	10y	N06D	
Cancer	DNPR/ICD-10	10y	C00-C96, D459, D46, D471, D473, D474, D475	C44
Metastatic cancer	DNPR/ICD-10	10y	C76-C80, CxxxM	
Peptic ulcer disease	DNPR/ICD-10	10y	K221, K25-K28	
Rheumatoid arthritis or connective tissue disease	DNPR/ICD-10	10y	M05-M06, M30-M36, M45	
<b>Co-medication</b>				
Number of antihypertensive drugs	NPD/ATC	90d	0-5 (see below: ACE-I/ARB, CCB, Thiazides/diuretics, BB, other antihypertensive drugs)	
Thiazides/diuretics	NPD/ATC	90d	C03AA01, C03AA03, C03AB01, C03AB03, C03AX01, C03EA, C07B, C09BA, C09DA, C09DX01, C09DX03, C09XA52, C09XA54	C07BA06 C09BA04
Beta-blockers (BB)	NPD/ATC	90d	C07	
Other antihypertensive drugs	NPD/ATC	90d	C02AC, C02CA, C03BA11, C09XA C02AB01	C09XA54
Statins	NPD/ATC	90d	C10AA, C10B	
Aspirin	NPD/ATC	90d	B01AC06, N02BA01, N02BA51	
Loop diuretics	NPD/ATC	90d	C03C	
Antibiotics	NPD/ATC	10d	J01	
Antivirals	NPD/ATC	10d	J05	

Variable	Source/format	Look-back	Inclusion codes	Exclusion codes
Immunosuppressants	NPD/ATC	90d	L04	
Glucocorticoids	NPD/ATC	90d	H02AB	
NSAID use	NPD/ATC	90d	M01A	
Opioid use	NPD/ATC	90d	N02A, N07BC02	
Vitamin K antagonists	NPD/ATC	90d	B01AA	
Proton pump inhibitors	NPD/ATC	90d	A02BC	
Antidepressants	NPD/ATC	90d	N06A	
Hypnotics/sedatives	NPD/ATC	90d	N05C	
Antipsychotics	NPD/ATC	90d	N05A	
<b>Lifestyle and social factors</b>				
Markers of smoking (diagnoses or medications for tobacco smoking or chronic obstructive pulmonary disease)	DNPR/ICD-10	10y	J41-J44, DF17, DZ716, DZ720	
	NPD/ATC	10y	R03, N07BA	
Obesity diagnoses or medications	DNPR/ICD-10	10y	E66	
	NPD/ATC	10y	A08	
Alcoholism-related diagnoses or medication for alcohol deterrent	DNPR/ICD-10	10y	DF10, DE244, DG312, DG621, DG721, DI426, DK292, DK70, DK852, DK860, DQ860, DZ502, DZ714, DZ721	F100
	NPD/ATC	10y	V03AA, N07BB	
Marital status (widow, divorced, married, unmarried)	CPR			
Rural/urban place of residence	CPR			

ATC Anatomical Therapeutic Chemical Classification System; CPR Danish Civil Registration System; DNPR Danish National Patient Registry; ICD-10 International Classification of Diseases 10<sup>th</sup> edition; NPD National Prescription Database.

**Table S2. Characteristics all influenza/pneumonia patients, overall and by main outcomes.**

	<i>Death within 30 days</i>	<i>ICU admission</i>	<i>Overall study population</i>
Number of patients	76 762 (100.0)	42 827 (100.0)	568 019 (100.0)
Age, median (Q1–Q3)	81.7 (73.0–88.0)	70.4 (60.4–78.7)	73.4 (60.5–82.9)
Male	41 696 (54.3)	24 945 (58.2)	290 847 (51.2)
<b>Coexisting conditions (within prior 10 years)</b>			
Hospital-diagnosed hypertension	26 779 (34.9)	13 096 (30.6)	168 929 (29.7)
Previous myocardial infarction	6 650 (8.7)	3 225 (7.5)	39 765 (7.0)
Diagnosis of stable angina pectoris	10 512 (13.7)	4 932 (11.5)	68 458 (12.1)
Heart failure	13 714 (17.9)	5 745 (13.4)	71 110 (12.5)
Stroke	13 312 (17.3)	4 745 (11.1)	65 390 (11.5)
Atrial fibrillation/flutter	18 205 (23.7)	6 782 (15.8)	95 028 (16.7)
Heart valve disease	6 330 (8.2)	2 775 (6.5)	34 773 (6.1)
Venous thromboembolism	4 475 (5.8)	2 028 (4.7)	28 527 (5.0)
Diabetes	14 424 (18.8)	8 797 (20.5)	96 530 (17.0)
Chronic pulmonary disease	20 574 (26.8)	12 982 (30.3)	158 700 (27.9)
Renal disease	7 039 (9.2)	3 644 (8.5)	40 703 (7.2)
End-stage renal disease	974 (1.3)	778 (1.8)	8 866 (1.6)
Liver disease	2 489 (3.2)	2 398 (5.6)	15 306 (2.7)
Dementia	9 755 (12.7)	1 226 (2.9)	35 086 (6.2)
Cancer	21 387 (27.9)	7 110 (16.6)	106 704 (18.8)
Metastatic cancer	5 178 (6.7)	903 (2.1)	18 613 (3.3)
Peptic ulcer disease	6 101 (7.9)	3 209 (7.5)	32 653 (5.7)
Rheumatoid arthritis or connective tissue disease	4 173 (5.4)	2 260 (5.3)	32 740 (5.8)
<b>Co-medication (prescription within 90 days)</b>			
Total number of antihypertensive drugs			
0	39 555 (51.5)	22 989 (53.7)	322 012 (56.7)
1	21 680 (28.2)	9 923 (23.2)	130 685 (23.0)
2	11 318 (14.7)	6 659 (15.5)	81 190 (14.3)
3	3 523 (4.6)	2 582 (6.0)	27 956 (4.9)
4	648 (0.8)	631 (1.5)	5 832 (1.0)
5	38 (0.0)	43 (0.1)	344 (0.1)
ACE-I	11 915 (15.5)	7 239 (16.9)	82 358 (14.5)
ARB	6 342 (8.3)	4 189 (9.8)	53 255 (9.4)
CCB	10 093 (13.1)	6 553 (15.3)	71 116 (12.5)
Thiazides	11 343 (14.8)	6 265 (14.6)	79 879 (14.1)
Beta-blockers	17 332 (22.6)	9 050 (21.1)	111 315 (19.6)
Other antihypertensive drugs	882 (1.1)	633 (1.5)	6 238 (1.1)
Statins	13 882 (18.1)	9 271 (21.6)	112 995 (19.9)
Aspirin	20 813 (27.1)	9 308 (21.7)	120 295 (21.2)
Loop diuretics	26 763 (34.9)	10 768 (25.1)	127 995 (22.5)
Immunosuppressants	716 (0.9)	555 (1.3)	6 744 (1.2)
Glucocorticoids	13 864 (18.1)	5 765 (13.5)	78 980 (13.9)
NSAID	9 173 (11.9)	5 957 (13.9)	68 602 (12.1)
Opioids	28 517 (37.1)	10 859 (25.4)	144 942 (25.5)
Vitamin K antagonists	5 315 (6.9)	3 044 (7.1)	38 277 (6.7)
Proton pump inhibitors	25 845 (33.7)	10 954 (25.6)	147 542 (26.0)
Antidepressants	21 494 (28.0)	9 481 (22.1)	121 248 (21.3)
Hypnotics/sedatives	13 963 (18.2)	6 336 (14.8)	79 343 (14.0)

	<i>Death within 30 days</i>	<i>ICU admission</i>	<i>Overall study population</i>
Antipsychotics	7 673 (10.0)	3 725 (8.7)	39 434 (6.9)
Antibiotics (prescription within 10 days)	18 201 (23.7)	7 442 (17.4)	160 059 (28.2)
Antivirals (prescription within 10 days)	142 (0.2)	68 (0.2)	1 537 (0.3)
<b>Lifestyle and social factors</b>			
Markers of smoking	34 551 (45.0)	21 621 (50.5)	279 883 (49.3)
Obesity	3 622 (4.7)	3 908 (9.1)	44 194 (7.8)
Alcoholism	6 551 (8.5)	7 002 (16.3)	46 063 (8.1)
Marital status			
Widow	30 732 (40.0)	9 352 (21.8)	153 071 (26.9)
Divorced	10 552 (13.7)	7 780 (18.2)	85 766 (15.1)
Married	28 207 (36.7)	18 398 (43.0)	245 727 (43.3)
Unmarried	7 271 (9.5)	7 297 (17.0)	83 455 (14.7)
Urban residence	26 494 (34.5)	13 268 (31.0)	208 285 (36.7)

Figure S1. Study design.

