

## SUPPLEMENT MATERIAL S3

	Primary analysis				
	(1)	(2)	(3)	(4)	(5)
	Inpatient stay	Inpatient stay with ICU/CCU	Inpatient stay with ARD dx	Inpatient stay with ARDS dx	Died same or following month
<b>Key coefficient estimates</b>					
<b>Season</b>					
2017-2018 flu season	ref.	ref.	ref.	ref.	ref.
2018-2019 flu season	-0.001 (-0.004,0.002)	0.008 (-0.002,0.018)	0.013*** (0.008,0.017)	-0.007*** (-0.010,-0.004)	0.000 (-0.002,0.002)
2019-2020 flu season	0.018*** (0.015,0.021)	0.035*** (0.026,0.044)	0.013*** (0.008,0.017)	0.013*** (0.009,0.016)	0.016*** (0.014,0.017)
<b>HTN medication group</b>					
Other medications only	ref.	ref.	ref.	ref.	ref.
ACEi or ARB plus/minus other medications	-0.019*** (-0.022,-0.016)	-0.009 (-0.019,0.001)	-0.007** (-0.011,-0.002)	-0.003 (-0.007,0.000)	-0.009*** (-0.011,-0.008)
ACEi or ARB monotherapy	N/A	N/A	N/A	N/A	N/A
<b>Season/medication interactions</b>					
2018-2019 season: ACEi or ARB + other	0.004* (0.001,0.008)	0.01 (-0.004,0.023)	0.004 (-0.003,0.010)	0 (-0.004,0.004)	0 (-0.002,0.002)
2018-2019 season: ACEi or ARB monotherapy	N/A	N/A	N/A	N/A	N/A
2019-2020 season: ACEi or ARB +/- other	0.015*** (0.012,0.019)	0.015* (0.003,0.027)	0.007* (0.001,0.012)	0.009*** (0.004,0.013)	-0.002 (-0.004,0.001)
2019-2020 season: ACEi or ARB monotherapy	N/A	N/A	N/A	N/A	N/A
Note: p-value for coefficients is for the null hypothesis that the coefficient = 0					
<b>Marginal effects/predicted probability</b>					
<b>Other hypertension medications only</b>					
2017/18	0.179 (0.177,0.181)	0.482 (0.474,0.489)	0.053 (0.050,0.056)	0.030 (0.028,0.033)	0.064 (0.062,0.065)
2018/19	0.178 (0.176,0.180)	0.490 (0.483,0.496)	0.066 (0.062,0.069)	0.023 (0.021,0.025)	0.064 (0.063,0.065)
2019/20	0.196 (0.195,0.198)	0.516 (0.511,0.521)	0.066 (0.063,0.068)	0.043 (0.041,0.045)	0.080 (0.078,0.081)

	Primary analysis				
	(1)	(2)	(3)	(4)	(5)
	Inpatient stay	Inpatient stay with ICU/CCU	Inpatient stay with ARD dx	Inpatient stay with ARDS dx	Died same or following month
<b>ACEi or ARB plus/minus other medications</b>					
2017/18	0.125 (0.124,0.127)	0.463 (0.456,0.470)	0.045 (0.042,0.048)	0.029 (0.027,0.031)	0.035 (0.034,0.035)
2018/19	0.128 (0.127,0.130)	0.481 (0.475,0.487)	0.061 (0.058,0.064)	0.021 (0.020,0.023)	0.034 (0.034,0.035)
2019/20	0.158 (0.157,0.160)	0.512 (0.508,0.517)	0.064 (0.062,0.066)	0.050 (0.048,0.052)	0.049 (0.048,0.049)
<b>ACEi or ARB monotherapy</b>					
2017/18	N/A	N/A	N/A	N/A	N/A
2018/19	N/A	N/A	N/A	N/A	N/A
2019/20	N/A	N/A	N/A	N/A	N/A
<b>Risk ratios of marginal effects</b>					
<b>Other hypertension medications only</b>					
2018/19 season vs. 2017/18	0.994 (0.977,1.011)	1.017 (0.996,1.038)	1.236*** (1.136,1.337)	0.759*** (0.668,0.850)	0.999 (0.969,1.030)
2019/20 season vs. 2017/18	1.099*** (1.081,1.116)	1.072*** (1.053,1.092)	1.238*** (1.147,1.330)	1.414*** (1.278,1.550)	1.244*** (1.210,1.278)
<b>ACEi or ARB plus/minus other medications</b>					
2018/19 season vs. 2017/18	1.025** (1.009,1.042)	1.039*** (1.019,1.058)	1.360*** (1.251,1.469)	0.739*** (0.656,0.822)	0.993 (0.961,1.025)
2019/20 season vs. 2017/18	1.264*** (1.245,1.282)	1.107*** (1.088,1.126)	1.437*** (1.332,1.542)	1.731*** (1.580,1.882)	1.404*** (1.363,1.444)
<b>ACEi or ARB monotherapy</b>					
2018/19 season vs. 2017/18	N/A	N/A	N/A	N/A	N/A
2019/20 season vs. 2017/18	N/A	N/A	N/A	N/A	N/A
Number of episodes	1,059,474	167,330	167,330	167,330	1,057,707
Number of people	728,455	147,846	147,846	147,846	727,311

Note: p-value for risk ratios is for the null hypothesis that the risk ratio = 1

N/A: variable not included in model

\* p<0.05, \*\* p<0.01, \*\*\* p<0.001

## Sensitivity analysis: ACEi/ARB monotherapy

	(6)	(7)	(8)	(9)	(10)
	Inpatient stay	Inpatient stay with ICU/CCU	Inpatient stay with ARD dx	Inpatient stay with ARDS dx	Died same or following month
<b>Key coefficient estimates</b>					
<b>Season</b>					
2017-2018 flu season	ref.	ref.	ref.	ref.	ref.
2018-2019 flu season	-0.001 (-0.004,0.002)	0.008 (-0.002,0.018)	0.013*** (0.008,0.017)	-0.007*** (-0.010,-0.004)	0 (-0.002,0.002)
2019-2020 flu season	0.018*** (0.015,0.021)	0.035*** (0.026,0.044)	0.013*** (0.008,0.017)	0.013*** (0.009,0.016)	0.016*** (0.014,0.017)
<b>HTN medication group</b>					
Other medications only	ref.	ref.	ref.	ref.	ref.
ACEi or ARB plus/minus other medications	-0.020*** (-0.023,-0.017)	-0.004 (-0.014,0.006)	-0.007** (-0.011,-0.002)	-0.002 (-0.006,0.001)	-0.010*** (-0.012,-0.009)
ACEi or ARB monotherapy	-0.016*** (-0.020,-0.012)	-0.039*** (-0.057,-0.020)	-0.007 (-0.015,0.001)	-0.009** (-0.015,-0.003)	-0.004*** (-0.006,-0.002)
<b>Season/medication interactions</b>					
2018-2019 season: ACEi or ARB +- other	0.004* (0.000,0.008)	0.004 (-0.009,0.018)	0.004 (-0.003,0.010)	-0.001 (-0.005,0.004)	-0.001 (-0.003,0.002)
2018-2019 season: ACEi or ARB monotherapy	0.005 (-0.001,0.010)	0.040** (0.015,0.065)	0.002 (-0.009,0.013)	0.002 (-0.006,0.009)	0.001 (-0.002,0.004)
2019-2020 season: ACEi or ARB +/- other	0.015*** (0.011,0.019)	0.011 (-0.001,0.024)	0.007* (0.002,0.013)	0.008*** (0.003,0.013)	-0.001 (-0.004,0.001)
2019-2020 season: ACEi or ARB monotherapy	0.017*** (0.012,0.022)	0.035** (0.013,0.057)	0.004 (-0.006,0.013)	0.012** (0.004,0.020)	-0.003* (-0.006,-0.000)
Note: p-value for coefficients is for the null hypotl					
<b>Marginal effects/predicted probability</b>					
<b>Other hypertension medications only</b>					
2017/18	0.179 (0.177,0.181)	0.481 (0.474,0.489)	0.053 (0.050,0.056)	0.030 (0.028,0.033)	0.064 (0.062,0.065)
2018/19	0.178 (0.176,0.180)	0.490 (0.483,0.496)	0.066 (0.062,0.069)	0.023 (0.021,0.025)	0.064 (0.063,0.065)
2019/20	0.196 (0.195,0.198)	0.516 (0.511,0.521)	0.066 (0.063,0.068)	0.043 (0.041,0.045)	0.079 (0.078,0.081)

## Sensitivity analysis: ACEi/ARB monotherapy

	(6)	(7)	(8)	(9)	(10)
	Inpatient stay	Inpatient stay with ICU/CCU	Inpatient stay with ARD dx	Inpatient stay with ARDS dx	Died same or following month
<b>ACEi or ARB plus/minus other medications</b>					
2017/18	0.133 (0.132,0.135)	0.473 (0.466,0.480)	0.046 (0.043,0.049)	0.030 (0.027,0.032)	0.037 (0.036,0.038)
2018/19	0.136 (0.135,0.138)	0.486 (0.479,0.492)	0.062 (0.059,0.065)	0.022 (0.020,0.024)	0.037 (0.036,0.038)
2019/20	0.166 (0.164,0.167)	0.519 (0.514,0.524)	0.066 (0.063,0.068)	0.050 (0.048,0.052)	0.052 (0.051,0.053)
<b>ACEi or ARB monotherapy</b>					
2017/18	0.093 (0.090,0.096)	0.408 (0.392,0.425)	0.040 (0.033,0.047)	0.024 (0.019,0.029)	0.024 (0.022,0.025)
2018/19	0.096 (0.094,0.099)	0.456 (0.441,0.472)	0.054 (0.047,0.061)	0.018 (0.014,0.022)	0.025 (0.023,0.026)
2019/20	0.127 (0.125,0.130)	0.478 (0.467,0.489)	0.056 (0.051,0.061)	0.048 (0.043,0.053)	0.036 (0.034,0.037)
<b>Risk ratios of marginal effects</b>					
<b>Other hypertension medications only</b>					
2018/19 season vs. 2017/18	0.994 (0.977,1.011)	1.017 (0.996,1.038)	1.236*** (1.136,1.337)	0.759*** (0.668,0.850)	0.999 (0.969,1.030)
2019/20 season vs. 2017/18	1.098*** (1.081,1.116)	1.072*** (1.053,1.092)	1.238*** (1.147,1.330)	1.414*** (1.278,1.550)	1.243*** (1.209,1.278)
<b>ACEi or ARB plus/minus other medications</b>					
2018/19 season vs. 2017/18	1.023* (1.005,1.041)	1.027* (1.006,1.048)	1.360*** (1.243,1.476)	0.735*** (0.647,0.824)	0.985 (0.950,1.019)
2019/20 season vs. 2017/18	1.244*** (1.225,1.264)	1.097*** (1.077,1.118)	1.441*** (1.329,1.554)	1.690*** (1.532,1.848)	1.382*** (1.339,1.425)
<b>ACEi or ARB monotherapy</b>					
2018/19 season vs. 2017/18	1.037 (0.993,1.080)	1.117*** (1.058,1.177)	1.358* (1.055,1.660)	0.766 (0.526,1.006)	1.047 (0.958,1.136)
2019/20 season vs. 2017/18	1.369*** (1.318,1.420)	1.170*** (1.115,1.226)	1.412** (1.129,1.694)	2.028*** (1.537,2.519)	1.526*** (1.412,1.640)
Number of episodes	1,059,474	167,330	167,330	167,330	1,057,707
Number of people	728,455	147,846	147,846	147,846	727,311

Note: p-value for risk ratios is for the null hypothe

N/A: variable not included in model

\* p&lt;0.05, \*\* p&lt;0.01, \*\*\* p&lt;0.001

**Sensitivity analysis: Dropping people with comorbidities (other than hypertension)**

	(11)	(12)	(13)	(14)	(15)
	Inpatient stay	Inpatient stay with ICU/CCU	Inpatient stay with ARD dx	Inpatient stay with ARDS dx	Died same or following month
<b>Key coefficient estimates</b>					
<b>Season</b>					
2017-2018 flu season	ref.	ref.	ref.	ref.	ref.
2018-2019 flu season	0.002 (-0.001,0.006)	0.02 (-0.032,0.072)	0.030** (0.009,0.051)	0.006 (-0.005,0.017)	0 (-0.002,0.002)
2019-2020 flu season	0.032*** (0.028,0.035)	0.068** (0.024,0.111)	0.029*** (0.014,0.045)	0.052*** (0.039,0.065)	0.007*** (0.005,0.009)
<b>HTN medication group</b>					
Other medications only	ref.	ref.	ref.	ref.	ref.
ACEi or ARB plus/minus other medications	-0.006*** (-0.009,-0.003)	-0.001 (-0.049,0.046)	0.009 (-0.008,0.026)	0.003 (-0.007,0.013)	-0.003*** (-0.004,-0.001)
ACEi or ARB monotherapy	N/A	N/A	N/A	N/A	N/A
<b>Season/medication interactions</b>					
2018-2019 season: ACEi or ARB + other	-0.003 (-0.007,0.001)	0.004 (-0.062,0.071)	-0.013 (-0.041,0.014)	0.001 (-0.015,0.017)	0.001 (-0.001,0.003)
2018-2019 season: ACEi or ARB monotherapy	N/A	N/A	N/A	N/A	N/A
2019-2020 season: ACEi or ARB +/- other	-0.001 (-0.006,0.003)	0.05 (-0.006,0.106)	-0.022* (-0.043,-0.001)	-0.001 (-0.019,0.016)	-0.001 (-0.003,0.001)
2019-2020 season: ACEi or ARB monotherapy	N/A	N/A	N/A	N/A	N/A
Note: p-value for coefficients is for the null hypotl					
<b>Marginal effects/predicted probability</b>					
<b>Other hypertension medications only</b>					
2017/18	0.031 (0.029,0.034)	0.312 (0.275,0.350)	0.023 (0.011,0.035)	0.009 (0.002,0.016)	0.007 (0.006,0.009)
2018/19	0.033 (0.031,0.036)	0.332 (0.296,0.368)	0.053 (0.036,0.070)	0.015 (0.006,0.024)	0.007 (0.006,0.008)
2019/20	0.063 (0.060,0.066)	0.380 (0.357,0.403)	0.053 (0.042,0.063)	0.061 (0.050,0.073)	0.014 (0.013,0.016)

**Sensitivity analysis: Dropping people with comorbidities (other than hypertension)**

	(11)	(12)	(13)	(14)	(15)
	Inpatient stay	Inpatient stay with ICU/CCU	Inpatient stay with ARD dx	Inpatient stay with ARDS dx	Died same or following month
<b>ACEi or ARB plus/minus other medications</b>					
2017/18	0.023 (0.022,0.025)	0.319 (0.289,0.349)	0.033 (0.021,0.044)	0.016 (0.008,0.023)	0.004 (0.003,0.004)
2018/19	0.022 (0.021,0.024)	0.343 (0.313,0.373)	0.049 (0.036,0.063)	0.023 (0.014,0.032)	0.004 (0.004,0.005)
2019/20	0.054 (0.052,0.055)	0.436 (0.418,0.454)	0.040 (0.033,0.048)	0.067 (0.058,0.076)	0.010 (0.009,0.011)
<b>ACEi or ARB monotherapy</b>					
2017/18	N/A	N/A	N/A	N/A	N/A
2018/19	N/A	N/A	N/A	N/A	N/A
2019/20	N/A	N/A	N/A	N/A	N/A
<b>Risk ratios of marginal effects</b>					
<b>Other hypertension medications only</b>					
2018/19 season vs. 2017/18	1.069 (0.953,1.186)	1.064 (0.893,1.235)	2.291 (0.893,3.688)	1.633 (0.078,3.189)	0.973 (0.744,1.203)
2019/20 season vs. 2017/18	2.008*** (1.823,2.193)	1.216** (1.053,1.379)	2.270* (1.013,3.526)	6.718* (1.473,11.963)	1.942*** (1.561,2.323)
<b>ACEi or ARB plus/minus other medications</b>					
2018/19 season vs. 2017/18	0.961 (0.875,1.047)	1.076 (0.939,1.213)	1.510 (0.842,2.177)	1.432 (0.544,2.320)	1.128 (0.879,1.377)
2019/20 season vs. 2017/18	2.291*** (2.124,2.458)	1.369*** (1.228,1.509)	1.234 (0.754,1.713)	4.210** (2.113,6.308)	2.624*** (2.142,3.107)
<b>ACEi or ARB monotherapy</b>					
2018/19 season vs. 2017/18	N/A	N/A	N/A	N/A	N/A
2019/20 season vs. 2017/18	N/A	N/A	N/A	N/A	N/A
Number of episodes	200,778	7,696	7,696	7,696	200,508
Number of people	175,494	7,647	7,647	7,647	175,251

Note: p-value for risk ratios is for the null hypothe

N/A: variable not included in model

\* p&lt;0.05, \*\* p&lt;0.01, \*\*\* p&lt;0.001

**Sensitivity analysis: limiting analysis to strict flu season (dropping summer months)**

	(16)	(17)	(18)	(19)	(20)
	Inpatient stay	Inpatient stay with ICU/CCU	Inpatient stay with ARD dx	Inpatient stay with ARDS dx	Died same or following month
<b>Key coefficient estimates</b>					
<b>Season</b>					
2017-2018 flu season	ref.	ref.	ref.	ref.	ref.
2018-2019 flu season	0 (-0.004,0.003)	0.009 (-0.002,0.019)	0.017*** (0.012,0.022)	-0.007*** (-0.010,-0.003)	0 (-0.002,0.002)
2019-2020 flu season	0.003* (0.000,0.007)	0.030*** (0.020,0.041)	0.017*** (0.011,0.022)	0.010*** (0.006,0.014)	0.017*** (0.015,0.020)
<b>HTN medication group</b>					
Other medications only	ref.	ref.	ref.	ref.	ref.
ACEi or ARB plus/minus other medications	-0.016*** (-0.019,-0.013)	-0.01 (-0.021,0.000)	-0.007** (-0.011,-0.002)	-0.003 (-0.006,0.001)	-0.009*** (-0.010,-0.007)
ACEi or ARB monotherapy	N/A	N/A	N/A	N/A	N/A
<b>Season/medication interactions</b>					
2018-2019 season: ACEi or ARB +/- other	0.002 (-0.002,0.006)	0.01 (-0.004,0.025)	0.001 (-0.006,0.008)	0 (-0.005,0.004)	0 (-0.003,0.002)
2018-2019 season: ACEi or ARB monotherapy	N/A	N/A	N/A	N/A	N/A
2019-2020 season: ACEi or ARB +/- other	0.008*** (0.004,0.012)	0.012 (-0.003,0.026)	0.008* (0.001,0.014)	0.008** (0.002,0.013)	-0.005*** (-0.008,-0.002)
2019-2020 season: ACEi or ARB monotherapy	N/A	N/A	N/A	N/A	N/A
Note: p-value for coefficients is for the null hypothesis					
<b>Marginal effects/predicted probability</b>					
<b>Other hypertension medications only</b>					
2017/18	0.175 (0.173,0.178)	0.480 (0.472,0.487)	0.053 (0.049,0.056)	0.030 (0.028,0.033)	0.061 (0.060,0.063)
2018/19	0.175 (0.172,0.177)	0.488 (0.480,0.496)	0.070 (0.066,0.074)	0.024 (0.021,0.026)	0.061 (0.060,0.063)
2019/20	0.179 (0.176,0.181)	0.510 (0.503,0.517)	0.069 (0.066,0.073)	0.041 (0.038,0.044)	0.079 (0.077,0.080)

**Sensitivity analysis: limiting analysis to strict flu season (dropping summer months)**

	(16)	(17)	(18)	(19)	(20)
	Inpatient stay	Inpatient stay with ICU/CCU	Inpatient stay with ARD dx	Inpatient stay with ARDS dx	Died same or following month
<b>ACEi or ARB plus/minus other medications</b>					
2017/18	0.122 (0.120,0.123)	0.459 (0.452,0.466)	0.044 (0.041,0.047)	0.028 (0.026,0.031)	0.033 (0.032,0.033)
2018/19	0.124 (0.122,0.125)	0.478 (0.470,0.485)	0.063 (0.059,0.066)	0.021 (0.019,0.023)	0.032 (0.032,0.033)
2019/20	0.133 (0.131,0.134)	0.501 (0.494,0.508)	0.069 (0.065,0.072)	0.046 (0.044,0.049)	0.045 (0.044,0.046)
<b>ACEi or ARB monotherapy</b>					
2017/18	N/A	N/A	N/A	N/A	N/A
2018/19	N/A	N/A	N/A	N/A	N/A
2019/20	N/A	N/A	N/A	N/A	N/A
<b>Risk ratios of marginal effects</b>					
<b>Other hypertension medications only</b>					
2018/19 season vs. 2017/18	0.998 (0.979,1.017)	1.018 (0.995,1.041)	1.324*** (1.208,1.440)	0.776*** (0.673,0.879)	1.002 (0.967,1.036)
2019/20 season vs. 2017/18	1.019 (1.000,1.039)	1.064*** (1.041,1.087)	1.313*** (1.201,1.425)	1.343*** (1.190,1.495)	1.282*** (1.241,1.324)
<b>ACEi or ARB plus/minus other medications</b>					
2018/19 season vs. 2017/18	1.017 (0.999,1.035)	1.041*** (1.019,1.063)	1.411*** (1.289,1.533)	0.750*** (0.655,0.846)	0.997 (0.960,1.034)
2019/20 season vs. 2017/18	1.091*** (1.071,1.110)	1.092*** (1.069,1.114)	1.542*** (1.413,1.671)	1.634*** (1.465,1.803)	1.380*** (1.331,1.428)
<b>ACEi or ARB monotherapy</b>					
2018/19 season vs. 2017/18	N/A	N/A	N/A	N/A	N/A
2019/20 season vs. 2017/18	N/A	N/A	N/A	N/A	N/A
Number of episodes	738,240	106,917	106,917	106,917	737,059
Number of people	556,579	97,383	97,383	97,383	555,729

Note: p-value for risk ratios is for the null hypothe

N/A: variable not included in model

\* p&lt;0.05, \*\* p&lt;0.01, \*\*\* p&lt;0.001