**Supplementary Material:**

Table S1: Geometric mean antibody titer (GMT) rise (95%CI) following vaccination by participant demographic, medical comorbidities and selected medications (n=403)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | **Influenza type B** | **Influenza type A H1N1** | **Influenza A H3N2** | |
|  | | | | **GMT (95%CI)** | **GMT (95%CI)** | **GMT (95%CI)** | |
| **Gender** |  | | | |  |  |
| Female | | | | 35.32 (29.26, 42.64) | 314.47 (254.91, 387.95) | 148.88 (115.21, 192.40) | |
| Male | | | | 54.47 (44.92, 66.05) | 371.94 (302.11, 457.92) | 154.10 (118.46, 200.47) | |
| **Age (yrs)** |  | | | |  |  |
| <30 | | | | 48.18 (32.05, 72.43) | 608.38 (407.35, 908.61) | 171.27 (92.58, 316.85) | |
| 31-40 | | | | 52.73 (41.08, 67.69) | 438.09 (344.85, 556.56) | 176.54 (124.42, 250.50) | |
| 41-50 | | | | 55.62 (42.43, 72.89) | 382.93 (289.75, 506.07) | 142.73 (98.23, 207.37) | |
| 51-60 | | | | 32.11 (24.77, 41.63) | 268.96 (197.46, 366.37) | 129.69 (93.17, 180.51) | |
| >60 | | | | 26.69 (16.02, 44.48) | 123.50 (72.53, 210.28) | 151.39 (79.70, 287.59) | |
| **Current smoker** | | | |  |  |  | |
| No | | | | 42.36 (36.49, 49.18) | 318.59 (270.51, 375.21) | 155.68 (126.65, 191.37) | |
| Yes | | | | 52.54 (37.64, 73.34) | 467.13 (333.11, 655.08) | 135.10 (90.61, 201.41) | |
| **Any previous flu vaccine (not within last 3 months)** | | | | |  |  | |
| No | | | | 74.41 (58.25, 95.05) | 467.28 (358.63, 608.85) | 153.65 (106.77, 221.10) | |
| Yes | | | | 34.91 (29.86, 40.81) | 296.68 (248.86, 353.69) | 150.45 (122.15, 185.30) | |
| **H1N1 vaccine in last flu season** | | | | |  |  | |
| No | | | | 37.85 (31.02, 46.20) | 374.96 (306.20, 459.17) | 160.96 (123.22, 210.26) | |
| Yes | | | | 30.29 (23.44, 39.15) | 179.64 (130.25, 247.76) | 135.39 (96.23, 190.49) | |
| Don’t know | | | | 40.00 (-, -) | 1,120.00 (-, -) | 60.00 (-, -) | |
| **Mobility (number of addresses since birth or 1970 if born prior to 1970)** | | | | | |  | |
| 1-3 | | | | 40.75 (26.52, 62.63) | 268.53 (166.20, 433.88) | 187.86 (113.75, 310.24) | |
| 4-6 | | | | 42.90 (35.29, 52.15) | 353.25 (287.94, 433.36) | 143.73 (109.44, 188.76) | |
| 7-9 | | | | 51.00 (37.91, 68.62) | 328.52 (237.79, 453.87) | 141.53 (94.34, 212.33) | |
| ≥10 | | | | 42.46 (31.00, 58.16) | 413.76 (291.47, 587.38) | 165.21 (110.31, 247.43) | |
| **Medical comorbidities** | | | | |  |  | |
| **Asthma** | |  | | |  |  | |
| No | | 43.76 (38.06, 50.31) | | | 331.97 (285.17, 386.46) | 150.30 (124.33, 181.69) | |
| Yes | | 52.12 (26.92, 100.90) | | | 632.52 (355.18, 1,126.41) | 168.64 (80.58, 352.95) | |
| **Chronic obstructive pulmonary disease** | | | | |  |  | |
| No | | 43.84 (38.23, 50.28) | | | 344.04 (296.67, 398.98) | 151.72 (126.16, 182.45) | |
| Yes | | 92.12 (11.94, 710.56) | | | 243.37 (6.54, 9,060.91) | 134.01 (15.28, 1,175.64) | |
| **Any lung disease** | | | | |  |  | |
| No | | 43.37 (37.69, 49.90) | | | 332.86 (285.69, 387.81) | 150.53 (124.29, 182.32) | |
| Yes | | 57.09 (31.81, 102.45) | | | 555.28 (320.11, 963.19) | 162.78 (85.28, 310.71) | |
| **Diabetes** | |  | | |  |  | |
| No | | 45.47 (39.46, 52.40) | | | 360.66 (309.79, 419.88) | 154.05 (127.00, 186.86) | |
| Yes | | 33.12 (20.07, 54.65) | | | 205.34 (116.73, 361.21) | 126.09 (70.64, 225.08) | |
| **Kidney disease** | | | | |  |  | |
| No | | 44.18 (38.54, 50.65) | | | 342.02 (294.93, 396.62) | 150.54 (125.38, 180.76) | |
| Yes | | 48.99 (-, -) | | | 609.92 (495.22, 751.18) | 1,120.00 (-, -) | |
| **Heart disease** | | | | |  |  | |
| No | | 44.41 (38.64, 51.04) | | | 352.49 (303.60, 409.26) | 154.03 (127.74, 185.72) | |
| Yes | | 37.61 (19.02, 74.40) | | | 141.15 (58.65, 339.71) | 84.88 (45.15, 159.54) | |
| **Liver disease** | | | | |  |  | |
| No | | | 43.60 (38.07, 49.94) | | 343.46 (296.60, 397.73) | 153.01 (127.30, 183.90) | |
| Yes | | | 225.26 (2.94, 17,240.40) | | 309.92 (3.53, 27,178.65) | 52.41 (5.56, 494.52) | |
| **Hypertension** | | | | |  |  | |
| No | | | 43.94 (38.33, 50.37) | | 341.44 (294.35, 396.05) | 151.49 (126.08, 182.02) | |
| Yes | | | 91.10 (1.72, 4,831.11) | | 619.84 (110.63, 3,472.92) | 151.42 (1.02, 22,473.60) | |
| **Any of the medical conditions listed above** | | | | |  |  | |
| No | | | 44.60 (38.40, 51.79) | | 362.07 (308.80, 424.52) | 156.65 (127.30, 192.78) | |
| Yes | | | 42.49 (30.35, 59.49) | | 267.28 (181.77, 392.99) | 130.44 (89.03, 191.13) | |
| **Medications** | | | | |  |  | |
| **Paracetamol** | | | | |  |  | |
| No | | | 44.56 (38.81, 51.15) | | 346.71 (298.38, 402.87) | 152.43 (126.90, 183.11) | |
| Yes | | | 31.32 (11.78, 83.30) | | 234.40 (101.47, 541.43) | 114.38 (13.36, 979.33) | |
| **Aspirin** | | |  | |  |  | |
| No | | | 45.66 (39.36, 52.98) | | 351.07 (299.56, 411.43) | 168.67 (138.79, 204.99) | |
| Yes | | | 35.46 (25.44, 49.43) | | 295.85 (196.44, 445.57) | 69.46 (43.22, 111.63) | |
| **Over the counter anti-inflammatory medication** | | | | |  |  | |
| No | | | 44.24 (38.50, 50.84) | | 338.57 (291.09, 393.78) | 153.60 (127.53, 185.00) | |
| Yes | | | 43.56 (20.77, 91.38) | | 445.18 (214.67, 923.22) | 114.04 (39.53, 329.00) | |

**Table S2: Baseline participant medical comorbidities and selected medications, PFOA/PFOS serum concentrations (ng/mL) and pre-vaccination geometric mean antibody titers (GMT) (n=411)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Number (%)** | **Median log10 PFOA serum concentration at vaccination (IQR)** | **Median log10 PFOS serum concentration at vaccination (IQR)** | **Influenza type B**  **GMT (95%CI)** | **Influenza A H1N1**  **GMT (95%CI)** | **Influenza A H3N2**  **GMT (95%CI)** |
| **Medical comorbidities** | |  |  |  |  |  |
| **Asthma** |  |  |  |  |  |  |
| No | 387 (94.2) | 1.52 (1.15, 1.97) | 0.97 (0.76, 1.17) | 8.56 (7.85, 9.33) | 14.99 (12.94, 17.36) | 20.43 (17.55, 23.79) |
| Yes | 24 (5.8) | 1.30 (1.02, 1.82) | 0.91 (0.67, 1.10) | 11.89 (7.99, 17.70) | 51.87(23.00, 117.00) | 25.20 (14.63, 43.40) |
| **Chronic obstructive pulmonary disease** | | |  |  |  |  |
| No | 406 (98.8) | 1.50 (1.14, 1.95) | 0.96 (0.76, 1.16) | 8.65 (7.95, 9.41) | 16.10 (13.88, 18.68) | 20.45 (17.64, 23.70) |
| Yes | 5 (1.2) | 1.46 (1.33, 1.91) | 1.04 (0.91, 1.06) | 17.41 (4.23, 71.62) | 17.41 (1.73, 175.30) | 52.78(16.63,167.47) |
| **Any lung disease** | |  |  |  |  |  |
| No | 382 (92.9) | 1.52 (1.15, 1.97) | 0.97 (0.76, 1.17) | 8.48 (7.78, 9.24) | 14.96 (12.91, 17.34) | 20.18 (17.31, 23.53) |
| Yes | 29 (7.1) | 1.33 (1.06, 1.83) | 0.91 (0.76, 1.06) | 12.70 (8.79, 18.35) | 42.97 (20.64, 89.48) | 28.62 (17.78, 46.07) |
| **Diabetes** |  |  |  |  |  |  |
| No | 370 (90.0) | 1.51 (1.13, 1.94) | 0.96 (0.76, 1.16) | 8.56 (7.85, 9.33) | 16.12 (13.79, 18.85) | 19.16 (16.45, 22.30) |
| Yes | 41 (10.0) | 1.44 (1.19, 2.04) | 1.02 (0.73, 1.18) | 10.34 (7.35, 14.57) | 16.05 (9.93, 25.96) | 41.38 (25.37, 67.48) |
| **Kidney disease** | |  |  |  |  |  |
| No | 408 (99.3) | 1.50 (1.14, 1.95) | 0.96 (0.76, 1.16) | 8.67 (7.97, 9.43) | 16.12 (13.89, 18.70) | 20.41 (17.64, 23.61) |
| Yes | 3 (0.7) | 1.25 (1.12, 2.03) | 1.06 (1.02, 1.49) | 20.0(0.21,1,903.37) | 15.87 (1.14, 220.28) | 126.99(0.30,53,698.71) |
| **Heart disease** |  |  |  |  |  |  |
| No | 399 (97.1) | 1.49 (1.13, 1.94) | 0.97 (0.76, 1.17) | 8.66 (7.94, 9.43) | 16.35 (14.07, 19.00) | 20.35 (17.55, 23.60) |
| Yes | 12 (2.9) | 1.69 (1.47, 2.09) | 0.86 (0.63, 1.07) | 11.22 (6.87, 18.34) | 10.00 (3.91, 25.57) | 35.64 (12.78, 99.39) |
| **Liver disease** |  |  |  |  |  |  |
| No | 407 (99.0) | 1.50 (1.14, 1.95) | 0.96 (0.76, 1.16) | 8.71 (8.00, 9.48) | 16.03 (13.81, 18.60) | 20.52 (17.71, 23.77) |
| Yes | 4 (1.0) | 1.28 (1.11, 1.74) | 1.11 (0.77, 1.36) | 10.00 (2.10, 47.58) | 28.28 (4.19, 191.08) | 47.57 (5.90, 383.76) |
| **Hypertension** |  |  |  |  |  |  |
| No | 408 (99.3) | 1.50 (1.14, 1.95) | 0.96 (0.76, 1.16) | 8.68 (7.99, 9.44) | 16.12 (13.89, 18.70) | 20.66 (17.83, 23.93) |
| Yes | 3 (0.7) | 1.79 (1.35, 2.03) | 1.21 (0.81, 1.49) | 15.87(0.11,2,287.70) | 15.87 (1.14, 220.28) | 25.20(0.33,1,919.97) |
| **Any of the medical conditions listed above** | | |  |  |  |  |
| No | 332 (80.8) | 1.52 (1.15, 1.96) | 0.96 (0.76, 1.16) | 8.20 (7.51, 8.95) | 15.34 (13.07, 18.01) | 18.13 (15.45, 21.28) |
| Yes | 79 (19.2) | 1.44 (1.12, 1.91) | 0.96 (0.76, 1.20) | 11.31 (8.93, 14.31) | 19.83 (13.65, 28.80) | 36.00 (25.69, 50.45) |
| **Medications** |  |  |  |  |  |  |
| **Paracetamol** |  |  |  |  |  |  |
| No | 401 (97.6) | 1.50 (1.14, 1.95) | 0.96 (0.76, 1.16) | 8.72 (8.01, 9.50) | 16.37(14.08,19.02) | 20.56 (17.72, 23.85) |
| Yes | 10 (2.4) | 1.42 (1.27, 1.88) | 0.93 (0.79, 1.18) | 8.71 (4.53, 16.72) | 8.71 (3.90, 19.43) | 26.39 (9.23, 75.46) |
| **Aspirin** |  |  |  |  |  |  |
| No | 354 (86.1) | 1.49 (1.11, 1.94) | 0.96 (0.75, 1.15) | 8.53 (7.80, 9.34) | 16.22 (13.83, 19.02) | 20.36 (17.38, 23.84) |
| Yes | 57 (13.9) | 1.62 (1.28, 1.98) | 1.05 (0.82, 1.21) | 10.00(7.80, 12.82) | 15.49 (10.26, 23.40) | 22.86 (15.37, 34.00) |
| **Over the counter anti-inflammatory medication** | | |  |  |  |  |
| No | 391 (95.1) | 1.50 (1.14, 1.95) | 0.97 (0.76, 1.17) | 8.83 (8.10, 9.64) | 16.28 (13.98, 18.96) | 21.13 (18.17, 24.57) |
| Yes | 20 (4.9) | 1.45 (1.01, 1.97) | 0.92 (0.82, 1.03) | 6.83 (4.86, 9.60) | 13.20 (6.93, 25.12) | 13.66 (7.30, 25.57) |

**Table S3: Linear regression coefficients of log10 transformed influenza antibody titer rise and log10 transformed influenza antibody titer ratio with unit increase in untransformed PFOA and PFOS serum concentration (n=403)**

1. **Untransformed PFOA/PFOS (as continuous variable)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **PFOA (ng/mL)** | | | **PFOS (ng/mL)** | | |
|  | **Regression Coefficient** | **95% CI** | **p-value** | **Regression Coefficient** | **95% CI** | **p-value** |
| **Influenza Type B** | | |  |  |  |  |
| **Log10 transformed antibody titer rise (n=359)\*** | | |  |  |  |  |
| Adjusted **a** | 0.01 | (-0.36, 0.38) | 0.97 | 3.59 | (-4.75, 11.93) | 0.40 |
| **Log10 transformed antibody titer ratio (post-vaccine: pre-vaccine)** | | | |  |  |  |
| Adjusted **a** | -0.22 | (-0.55, 0.11) | 0.19 | 3.69 | (-3.57, 10.95) | 0.32 |
| **Influenza A/H1N1** | | |  |  |  |  |
| **Log10 transformed antibody titer rise (n=322)\*** | | |  |  |  |  |
| Adjusted **a** | -0.02 | (-0.43, 0.38) | 0.91 | 8.87 | (-0.15, 17.89) | 0.05 |
| **Log10 transformed antibody titer ratio (post-vaccine: pre-vaccine)** | | | |  |  |  |
| Adjusted **a** | 0.13 | (-0.35, 0.61) | 0.61 | 1.81 | (-8.86, 12.47) | 0.74 |
| **Influenza A/H3N2** | | |  |  |  |  |
| **Log10 transformed antibody titer rise (n=372)\*** | | |  |  |  |  |
| Adjusted **a** | 0.48 | (-0.05, 1.00) | 0.08 | 1.46 | (-10.46, 13.38) | 0.81 |
| **Log10 transformed antibody titer ratio (post-vaccine: pre-vaccine)** | | | |  |  |  |
| Adjusted **a** | -0.25 | (-0.72, 0.22) | 0.29 | -1.47 | (-11.89, 8.95) | 0.78 |

**Legend: a** = adjusted for age (cubic spline), gender, mobility and history of previous influenza vaccination

**\*** log10 transformed antibody titer rise missing for participants with untransformed antibody titer rise of 0

Table S4: Logistic regression OR (95% C.I.) of seroconversion (4-fold increase in antibody titer following vaccination) across participant demographics, medical comorbidities and medications (n=403)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | | **Influenza type B - odds ratio for seroconversion** | | | | |
| **Patient demographic** | | **Number who seroconvert following vaccination (row %)** | **Adjusted OR**  **(95% CI)a** | **p** | **p value of LRT for null vs general association** | **p value of LRT for null vs linear association** |
| **Gender** | |  |  |  |  |  |
| Female | | 110/198 (55.6%) | 1 | 0.04 | 0.04 | - |
| Male | | 140/205 (68.3%) | 1.58 (1.02, 2.45) |
| **Age** | |  |  |  |  |  |
| < 30 years | | 29/48 (60.4%) | 1 |  | 0.04 | 0.07 |
| 31-40 years | | 71/105 (67.6%) | 1.70 (0.80, 3.63) | 0.17 |
| 41-50 years | | 74/105 (70.5%) | 1.66 (0.77, 3.58) | 0.19 |
| 51-60 years | | 60/107 (56.1%) | 1.01 (0.48, 2.12) | 0.97 |
| > 60 years | | 16/38 (42.1%) | 0.58 (0.23, 1.44) | 0.24 |
| **Current smoker** | | |  |  |  |  |
| No | | 200/326 (61.3%) | 1 |  | 0.91 | - |
| Yes | | 50/77 (64.9%) | 0.97 (0.55, 1.71) | 0.91 |
| **Previous flu vaccine at any time in the past (except last 3 months)** | | | |  |  |  |
| No | | 100/119 (84.0%) | 1 |  | <0.0001 | - |
| Yes | | 150/284 (52.8%) | 0.25 (0.14, 0.43) | <0.0001 |
| **H1N1 vaccine in last flu season** | | | |  |  |  |
| No | | 99/176 (56.3%) | 1\* |  | 0.28 | - |
| Yes | | 51/107 (47.7%) | 0.76 (0.46, 1.25) | 0.28 |
| Don't know | | 0/1 (0.0%) | - | - |
| **Mobility (number of addresses since birth or 1970 if born prior to 1970)** | | | | |  |  |
| 1-3 | | 31/53 (58.5%) | 1 |  |  |  |
| 4-6 | | 124/204 (60.8%) | 0.87 (0.44, 1.74) | 0.70 |  |  |
| 7-9 | | 59/86 (68.6%) | 1.17 (0.53, 2.60) | 0.70 |  |  |
| ≥10 | | 36/60 (60.0%) | 0.92 (0.40, 2.12) | 0.84 | 0.79 | 0.82 |
| **Medical comorbidities** | | |  |  |  |  |
| **Asthma** |  | |  |  |  |  |
| No | 236/379 (62.3%) | | 1 |  | 0.98 | - |
| Yes | 14/24 (58.3%) | | 1.01 (0.42, 2.46) | 0.98 |
| **Chronic obstructive pulmonary disease** | | | |  |  |  |
| No | 248/398 (62.3%) | | 1 |  | 0.81 | - |
| Yes | 2/5 (40.0%) | | 0.79 (0.12, 5.13) | 0.81 |
| **Any lung disease** | | |  |  |  |  |
| No | 234/374 (62.6%) | | 1 |  | 0.94 | - |
| Yes | 16/29 (55.2%) | | 0.97 (0.43, 2.16) | 0.94 |
| **Diabetes** |  | |  |  |  |  |
| No | 232/363 (63.9%) | | 1 |  | 0.47 | - |
| Yes | 18/40 (45.0%) | | 0.77 (0.38, 1.58) | 0.47 |
| **Kidney disease** | | |  |  |  |  |
| No | 249/401 (62.1%) | | 1 |  | 0.81 | - |
| Yes | 1/2 (50.0%) | | 1.41 (0.08, 24.03) | 0.81 |
| **Heart disease** |  | |  |  |  |  |
| No | 245/391 (62.7%) | | 1 |  | 0.40 | - |
| Yes | 5/12 (41.7%) | | 0.57 (0.16, 2.07) | 0.40 |
| **Liver disease** |  | |  |  |  |  |
| No | 247/399 (61.9%) | | 1 |  | 0.60 | - |
| Yes | 3/4 (75.0%) | | 1.92 (0.17, 21.27) | 0.60 |
| **Hypertension** |  | |  |  |  |  |
| No | 248/400 (62.0%) | | 1 |  | 0.86 | - |
| Yes | 2/3 (66.7%) | | 1.28 (0.09, 17.94) | 0.86 |
| **Any of conditions above** | | |  |  |  |  |
| No | 211/326 (64.7%) | | 1 |  | 0.54 | - |
| Yes | 39/77 (50.6%) | | 0.84 (0.48, 1.46) | 0.54 |
| **Medications** |  | |  |  |  |  |
| **Paracetamol** |  | |  |  |  |  |
| No | 246/393 (62.6%) | | 1 |  | 0.40 | - | |
| Yes | 4/10 (40.0%) | | 0.55 (0.14, 2.22) | 0.40 |
| **Aspirin (low or regular dose)** | | |  |  |  |  | |
| No | 221/347 (63.7%) | | 1 |  | 0.49 | - | |
| Yes | 29/56 (51.8%) | | 0.55 (0.14, 2.22) | 0.40 |
| **Over the counter anti-inflammatory medication** | | | |  |  |  | |
| No | 238/385 (61.8%) | | 1 |  | 0.82 | - | |
| Yes | 12/18 (66.7%) | | 1.14 (0.38, 3.44) | 0.82 |

**Legend: a** = adjusted for age (cubic spline), gender, mobility and history of previous influenza vaccination

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | | **Influenza A H1N1 - odds ratio for seroconversion** | | | | |
| **Patient demographic** | | **Number who seroconvert following vaccination (row %)** | **Adjusted OR**  **(95% CI)a** | **p** | **p value of LRT for null vs general association** | **p value of LRT for null vs linear association** |
| **Gender** | |  |  |  |  |  |
| Female | | 166/198 (83.8%) | 1 | 0.57 | 0.57 | - |
| Male | | 173/205 (84.4%) | 0.85 (0.49, 1.48) |
| **Age** | |  |  |  |  |  |
| < 30 years | | 41/48 (85.4%) | 1 |  | 0.80 | 0.99 |
| 31-40 years | | 90/105 (85.7%) | 1.13 (0.41, 3.11) | 0.81 |
| 41-50 years | | 88/105 (83.8%) | 0.83 (0.31, 2.25) | 0.71 |
| 51-60 years | | 87/107 (81.3%) | 0.87 (0.33, 2.31) | 0.79 |
| > 60 years | | 33/38 (86.8%) | 1.50 (0.42, 5.31) | 0.53 |
| **Current smoker** | | |  |  |  |  |
| No | | 271/326 (83.1%) | 1 |  | 0.45 | - |
| Yes | | 68/77 (88.3%) | 1.36 (0.61, 3.00) | 0.45 |
| **Previous flu vaccine at any time in the past (except last 3 months)** | | | |  |  |  |
| No | | 115/119 (96.6%) | 1\* |  | <0.001 | - |
| Yes | | 224/284 (78.9%) | 0.13 (0.05, 0.37) | <0.001 |
| **H1N1 vaccine in last flu season** | | |  |  |  |  |
| No | | 165/176 (93.8%) | 1 |  | <0.001 | - |
| Yes | | 58/107 (54.2%) | 0.07 (0.03, 0.14) | <0.001 |
| Don't know | | 1/1 (0.0%) | - | - |
| **Mobility (number of addresses since birth or 1970 if born prior to 1970)** | | | |  |  |  |
| 1-3 | | 43/53 (81.1%) | 1 |  |  |  |
| 4-6 | | 177/204 (86.8%) | 1.54 (0.65, 3.63) | 0.32 |  |  |
| 7-9 | | 71/86 (82.6%) | 1.17 (0.45, 3.06) | 0.75 |  |  |
| ≥10 | | 48/60 (80.0%) | 1.13 (0.41, 3.10) | 0.81 | 0.70 | 0.78 |
| **Medical comorbidities** | | |  |  |  |  |
| **Asthma** |  | |  |  |  |  |
| No | 321/379 (84.7%) | | 1 |  | 0.24 | - |
| Yes | 18/24 (75.0%) | | 0.55 (0.20, 1.51) | 0.24 |
| **Chronic obstructive pulmonary disease** | | |  |  |  |  |
| No | 336/398 (84.4%) | | 1 |  | 0.43 | - |
| Yes | 3/5 (60.0%) | | 0.47 (0.07, 3.08) | 0.43 |
| **Any lung disease** | | |  |  |  |  |
| No | 318/374 (85.0%) | | 1 |  | 0.16 | - |
| Yes | 21/29 (72.4%) | | 0.52 (0.21, 1.29) | 0.16 |
| **Diabetes** |  | |  |  |  |  |
| No | 309/363 (85.1%) | | 1 |  | 0.46 | - |
| Yes | 30/40 (75.0%) | | 0.73 (0.32, 1.67) | 0.46 |
| **Kidney disease** | | |  |  |  |  |
| No | 337/401 (84.0%) | | 1 |  | - | - |
| Yes | 2/2 (100.0%) | | - | - |
| **Heart disease** |  | |  |  |  |  |
| No | 329/391 (84.1%) | | 1 |  | 0.93 | - |
| Yes | 10/12 (83.3%) | | 0.93 (0.18, 4.75) | 0.93 |
| **Liver disease** |  | |  |  |  |  |
| No | 336/399 (84.2%) | | 1 |  | 0.76 | - |
| Yes | 3/4 (75.0%) | | 0.68 (0.06, 7.72) | 0.76 |
| **Hypertension** |  | |  |  |  |  |
| No | 336/400 (84.0%) | | 1 |  | - | - |
| Yes | 3/3 (100.0%) | | - | - |
| **Any of conditions above** | | |  |  |  |  |
| No | 279/326 (85.6%) | | 1 |  | 0.43 | - |
| Yes | 60/77 (77.9%) | | 0.77 (0.39, 1.49) | 0.43 |
| **Medications** |  | |  |  |  |  |
| **Paracetamol** |  | |  |  |  |  |
| No | 330/393 (84.0%) | | 1 |  | 0.38 | - |
| Yes | 9/10 (90.0%) | | 2.59 (0.31, 21.83) | 0.38 |
| **Aspirin (low or regular dose)** | | |  |  |  |  |
| No | 293/347 (84.4%) | | 1 |  | 0.98 | - |
| Yes | 46/56 (82.1%) | | 1.01 (0.44, 2.33) | 0.98 |
| **Over the counter anti-inflammatory medication** | | |  |  |  |  |
| No | 322/385 (83.6%) | | 1 |  | 0.38 | - |
| Yes | 17/18 (94.4%) | | 2.56 (0.32, 20.56) | 0.38 |

**Legend: a** = adjusted for age (cubic spline), gender, mobility and history of previous influenza vaccination

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | **Influenza A H3N2 - odds ratio for seroconversion** | | | | | | | |
| **Patient demographic** | | **Number who seroconvert following vaccination**  **(row %)** | **Adjusted OR**  **(95% CI)a** | **p** | | **p value of LRT for null vs general association** | | **p value of LRT for null vs linear association** | |
| **Gender** | |  |  |  | |  | |  | |
| Female | | 124/198 (62.6%) | 1 | 0.75 | | 0.75 | | - | |
| Male | | 137/205 (66.8%) | 1.07 (0.70, 1.65) |
| **Age** | |  |  |  | |  | |  | |
| < 30 years | | 33/48 (68.8%) | 1 |  | | 0.85 | | 0.53 | |
| 31-40 years | | 71/105 (67.6%) | 1.01 (0.47, 2.17) | 0.98 | |
| 41-50 years | | 67/105 (63.8%) | 0.73 (0.34, 1.57) | 0.42 | |
| 51-60 years | | 67/107 (62.6%) | 0.85 (0.40, 1.80) | 0.67 | |
| > 60 years | | 23/38 (60.5%) | 0.87 (0.35, 2.19) | 0.77 | |
| **Current smoker** | | |  |  | |  | |  | |
| No | | 210/326 (64.4%) | 1 |  | | 0.93 | | - | |
| Yes | | 51/77 (66.2%) | 0.98 (0.56, 1.71) | 0.93 | |
| **Previous flu vaccine at any time in the past (except last 3 months)** | | | |  | |  | |  | |
| No | | 97/119 (81.5%) | 1 |  | | <0.001 | | - | |
| Yes | | 164/284 (57.7%) | 0.31 (0.18, 0.53) | <0.001 | |
| **H1N1 vaccine in last flu season** | | |  |  | |  | |  | |
| No | | 112/176 (63.6%) | 1\* |  | | <0.01 | | - | |
| Yes | | 51/107 (47.7%) | 0.53 (0.32, 0.88) | 0.01 | |
| Don't know | | 1/1 (0.0%) | - | - | |
| **Mobility (number of addresses since birth or 1970 if born prior to 1970)** | | | | | |  | |  | |
| 1-3 | | 36/53 (67.9%) | 1 |  | |  | |  | |
| 4-6 | | 122/204 (59.8%) | 0.64 (0.32, 1.27) | 0.20 | |  | |  | |
| 7-9 | | 62/86 (72.1%) | 1.22 (0.54, 2.72) | 0.63 | |  | |  | |
| ≥10 | | 41/60 (68.3%) | 1.15 (0.49, 2.68) | 0.75 | | 0.07 | | 0.15 | |
| **Medical comorbidities** | | |  |  | |  | |  | |
| **Asthma** |  | |  |  | |  | |  | |
| No | 243/379 (64.1%) | | 1 |  | | 0.20 | | - | |
| Yes | 18/24 (75.0%) | | 1.90 (0.71, 5.07) | 0.20 | |
| **Chronic obstructive pulmonary disease** | | | |  | |  | |  | |
| No | 258/398 (64.8%) | | 1 |  | | 0.77 | | - | |
| Yes | 3/5 (60.0%) | | 1.33 (0.21, 8.50) | 0.77 | |
| **Any lung disease** | | |  |  | |  | |  | |
| No | 240/374 (64.2%) | | 1 |  | | 0.20 | | - | |
| Yes | 21/29 (72.4%) | | 1.78 (0.75, 4.23) | 0.20 | |
| **Diabetes** |  | |  |  | |  | |  | |
| No | 242/363 (66.7%) | | 1 |  | | 0.15 | | - | |
| Yes | 19/40 (47.5%) | | 0.60 (0.30, 1.21) | 0.15 | |
| **Kidney disease** | | |  |  | |  | |  | |
| No | 260/401 (64.8%) | | 1 |  | | 0.95 | | - | |
| Yes | 1/2 (50.0%) | | 1.10 (0.06, 18.73) | 0.95 | |
| **Heart disease** |  | |  |  | |  | |  | |
| No | 253/391 (64.7%) | | 1 |  | | 0.74 | | - | |
| Yes | 8/12 (66.7%) | | 1.25 (0.35, 4.48) | 0.74 | |
| **Liver disease** |  | |  |  | |  | |  | |
| No | 259/399 (64.9%) | | 1 |  | | 0.67 | | - | |
| Yes | 2/4 (50.0%) | | 0.63 (0.08, 5.21) | 0.67 | |
| **Hypertension** |  | |  |  | |  | |  | |
| No | 259/400 (64.8%) | | 1 |  | | 0.78 | | - | |
| Yes | 2/3 (66.7%) | | 1.44 (0.11, 18.26) | 0.78 | |
| **Any of conditions above** | | |  |  | |  | |  | |
| No | 216/326 (66.3%) | | 1 |  | | 0.83 | | - | |
| Yes | 45/77 (58.4%) | | 0.94 (0.54, 1.63) | 0.83 | |
| **Medications** |  | |  | |  | |  | |  | |
| **Paracetamol** |  | |  | |  | |  | |  | |
| No | 255/393 (64.9%) | | 1 |  | | 0.85 | | - | |
| Yes | 6/10 (60.0%) | | 1.14 (0.30, 4.31) | 0.85 | |
| **Aspirin (low or regular dose)** | | |  |  | |  | |  | |
| No | 233/347 (67.1%) | | 1 |  | | 0.03 | | - | |
| Yes | 28/56 (50.0%) | | 0.49 (0.25, 0.93) | 0.03 | |
| **Over the counter anti-inflammatory medication** | | | |  | |  | |  | |
| No | 248/385 (64.4%) | | 1 |  | | 0.83 | | - | |
| Yes | 13/18 (72.2%) | | 1.13 (0.37, 3.40) | 0.83 | |

**Legend: a** = adjusted for age (cubic spline), gender, mobility and history of previous influenza vaccination

Table S5: Logistic regression OR (95% C.I.) of seroprotection (HI antibody titer ≥1:40 following vaccination) across participant demographics, medical comorbidities and medications (n=403)

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | **Influenza type B - odds ratio for seroprotection** | | | | | | | | |
| **Patient demographic** | | | **Number are seroprotected following vaccination**  **(row %)** | **Adjusted OR**  **(95% CI)a** | | **p** | | **p value of LRT for null vs general association** | | **p value of LRT for null vs linear association** | |
| **Gender** | | |  |  | |  | |  | |  | |
| Female | | | 123/198 (62.1%) | 1 | | 0.13 | | 0.13 | | - | |
| Male | | | 143/205 (69.8%) | 1.41 (0.90, 2.21) | |
| **Age** | | |  |  | |  | |  | |  | |
| < 30 years | | | 32/48 (66.7%) | 1 | |  | | 0.0001 | | 0.0002 | |
| 31-40 years | | | 81/105 (77.1%) | 1.75 (0.81, 3.80) | | 0.15 | |
| 41-50 years | | | 80/105 (76.2%) | 1.44 (0.67, 3.12) | | 0.35 | |
| 51-60 years | | | 58/107 (54.2%) | 0.60 (0.29, 1.25) | | 0.18 | |
| > 60 years | | | 15/38 (39.5%) | 0.37 (0.15, 0.93) | | 0.03 | |
| **Current smoker** | | | |  | |  | |  | |  | |
| No | | | 210/326 (64.4%) | 1 | |  | | 0.55 | | - | |
| Yes | | | 56/77 (72.7%) | 1.20 (0.66, 2.19) | | 0.55 | |
| **Previous flu vaccine at any time in the past (except last 3 months)** | | | | | |  | |  | |  | |
| No | | | 93/119 (78.2%) | 1 | |  | | 0.01 | | - | |
| Yes | | | 173/284 (60.9%) | 0.50 (0.29, 0.84) | | 0.01 | |
| **H1N1 vaccine in last flu season** | | | |  | |  | |  | |  | |
| No | | | 113/176 (64.2%) | 1\* | |  | | 0.18 | | - | |
| Yes | | | 59/107 (55.1%) | 0.69 (0.41, 1.18) | | 0.18 | |
| Don't know | | | 1/1 (100.0%) | - | | - | |
| **Mobility (number of addresses since birth or 1970 if born prior to 1970)** | | | | | | | |  | |  | |
| 1-3 | | | 30/53 (56.6%) | 1 | |  | |  | |  | |
| 4-6 | | | 127/204 (62.3%) | 0.98 (0.50, 1.94) | | 0.96 | |  | |  | |
| 7-9 | | | 61/86 (70.9%) | 1.34 (0.61, 2.98) | | 0.47 | |  | |  | |
| ≥10 | | | 48/60 (80.0%) | 2.41 (0.97, 5.97) | | 0.06 | | 0.08 | | 0.02 | |
| **Medical comorbidities** | | | |  | |  | |  | |  | |
| **Asthma** | |  | |  | |  | |  | |  | |
| No | | 251/379 (66.2%) | | 1 | |  | | 0.73 | | - | |
| Yes | | 15/24 (62.5%) | | 0.85 (0.34, 2.11) | | 0.73 | |
| **Chronic obstructive pulmonary disease** | | | |  | |  | |  | |  | |
| No | | 262/398 (65.8%) | | 1 | |  | | 0.15 | | - | |
| Yes | | 4/5 (80.0%) | | 5.21 (0.54, 50.47) | | 0.15 | |
| **Any lung disease** | | | |  | |  | |  | |  | |
| No | | 247/374 (66.0%) | | 1 | |  | | 0.70 | | - | |
| Yes | | 19/29 (65.5%) | | 1.18 (0.51, 2.75) | | 0.70 | |
| **Diabetes** | |  | |  | |  | |  | |  | |
| No | | 247/363 (68.0%) | | 1 | |  | | 0.41 | | - | |
| Yes | | 19/40 (47.5%) | | 0.74 (0.36, 1.52) | | 0.41 | |
| **Kidney disease** | | | |  | |  | |  | |  | |
| No | | 265/401 (66.1%) | | 1 | |  | | 0.78 | | - | |
| Yes | | 1/2 (50.0%) | | 1.49 (0.09, 25.38) | | 0.78 | |
| **Heart disease** | |  | |  | |  | |  | |  | |
| No | | 257/391 (65.7%) | | 1 | |  | | 0.07 | | - | |
| Yes | | 9/12 (75.0%) | | 3.80 (0.91, 15.79) | | 0.07 | |
| **Liver disease** | |  | |  | |  | |  | |  | |
| No | | 263/399 (65.9%) | | 1 | |  | | 0.61 | | - | |
| Yes | | 3/4 (75.0%) | | 1.90 (0.16, 22.23) | | 0.61 | |
| **Hypertension** | |  | |  | |  | |  | |  | |
| No | | 264/400 (66.0%) | | 1 | |  | | 0.98 | | - | |
| Yes | | 2/3 (66.7%) | | 0.96 (0.06, 14.45) | | 0.98 | |
| **Any of conditions above** | | | |  | |  | |  | |  | |
| No | | 221/326 (67.8%) | | 1 | |  | | 0.70 | | - | |
| Yes | | 45/77 (58.4%) | | 1.12 (0.63, 1.99) | | 0.70 | |
| **Medications** |  | | |  | |  | |  | |  | |
| **Paracetamol** |  | | |  | | |  | |  | |  | |
| No | 260/393 (66.2%) | | | 1 | |  | | 0.91 | | - | |
| Yes | 6/10 (60.0%) | | | 0.93 (0.23, 3.70) | | 0.91 | |
| **Aspirin (low or regular dose)** | | | |  | |  | |  | |  | |
| No | 232/347 (66.9%) | | | 1 | |  | | 0.40 | | - | |
| Yes | 34/56 (60.7%) | | | 1.33 (0.68, 2.62) | | 0.40 | |
| **Over the counter anti-inflammatory medication** | | | | |  | | |  | |  | |
| No | 253/385 (65.7%) | | | 1 | |  | | 0.48 | | - | |
| Yes | 13/18 (72.2%) | | | 1.50 (0.48, 4.72) | | 0.48 | |

**Legend: a** = adjusted for age (cubic spline), gender, mobility and history of previous influenza vaccination

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | | **Influenza A H1N1 - odds ratio for seroprotection** | | | | |
| **Patient demographic** | | **Number are seroprotected following vaccination (row %)** | **Adjusted OR**  **(95% CI)a** | **p** | **p value of LRT for null vs general association** | **p value of LRT for null vs linear association** |
| **Gender** | |  |  |  |  |  |
| Female | | 187/198 (94.4%) | 1 | 0.24 | 0.24 | - |
| Male | | 198/205 (96.6%) | 1.86 (0.66, 5.29) |
| **Age** | |  |  |  |  |  |
| < 30 years | | 48/48 (100.0%) | 1 |  | 0.004 | 0.0001 |
| 31-40 years | | 104/105 (99.0%) | 14.45 (1.56, 133.84) | 0.02 |
| 41-50 years | | 103/105 (98.1%) | 6.33 (1.08, 37.14) | 0.04 |
| 51-60 years | | 97/107 (90.7%) | 1.32 (0.40, 4.33) | 0.65 |
| > 60 years | | 33/38 (86.8%) | 1 | - |
| **Current smoker** | | |  |  |  |  |
| No | | 310/326 (95.1%) | 1 |  | 0.50 | - |
| Yes | | 75/77 (97.4%) | 1.71 (0.36, 7.99) | 0.50 |
| **Previous flu vaccine at any time in the past (except last 3 months)** | | | |  |  |  |
| No | | 116/119 (97.5%) | 1\* |  | 0.74 | - |
| Yes | | 269/284 (94.7%) | 0.80 (0.21, 3.08) | 0.74 |
| **H1N1 vaccine in last flu season** | | | |  |  |  |
| No | | 169/176 (96.0%) | 1 |  | 0.23 | - |
| Yes | | 99/107 (92.5%) | 0.51 (0.17, 1.53) | 0.23 |
| Don't know | | 1/1 (100.0%) | - | - |
| **Mobility (number of addresses since birth or 1970 if born prior to 1970)** | | | |  |  |  |
| 1-3 | | 50/53 (94.3%) | 1\* |  |  |  |
| 4-6 | | 194/204 (95.1%) | 0.62 (0.15, 2.65) | 0.52 |  |  |
| 7-9 | | 82/86 (95.3%) | 0.51 (0.09, 2.83) | 0.44 |  |  |
| ≥10 | | 59/60 (98.3%) | 1.61 (0.15, 17.83) | 0.70 | 0.66 | 0.89 |
| **Medical comorbidities** | | |  |  |  |  |
| **Asthma** |  | |  |  |  |  |
| No | 361/379 (95.3%) | | 1 |  | - | - |
| Yes | 24/24 (100.0%) | | 1 | - |
| **Chronic obstructive pulmonary disease** | | |  |  |  |  |
| No | 381/398 (95.7%) | | 1 |  | 0.34 | - |
| Yes | 4/5 (80.0%) | | 0.33 (0.03, 3.26) | 0.34 |
| **Any lung disease** | | |  |  |  |  |
| No | 357/374 (95.5%) | | 1 |  | 0.62 | - |
| Yes | 28/29 (96.6%) | | 1.70 (0.21, 14.04) | 0.62 |
| **Diabetes** |  | |  |  |  |  |
| No | 351/363 (96.7%) | | 1 |  | 0.11 | - |
| Yes | 34/40 (85.0%) | | 0.39 (0.13, 1.22) | 0.11 |
| **Kidney disease** | | |  |  |  |  |
| No | 383/401 (95.5%) | | 1 |  | - | - |
| Yes | 2/2 (100.0%) | | 1 | - |
| **Heart disease** |  | |  |  |  |  |
| No | 373/391 (95.4%) | | 1 |  | - | - |
| Yes | 12/12 (100.0%) | | 1 | - |
| **Liver disease** |  | |  |  |  |  |
| No | 382/399 (95.7%) | | 1 |  | 0.09 | - |
| Yes | 3/4 (75.0%) | | 0.12 (0.01, 1.42) | 0.09 |
| **Hypertension** |  | |  |  |  |  |
| No | 382/400 (95.5%) | | 1 |  | - | - |
| Yes | 3/3 (100.0%) | | 1 | - |
| **Any of conditions above** | | |  |  |  |  |
| No | 315/326 (96.6%) | | 1 |  | 0.49 | - |
| Yes | 70/77 (90.9%) | | 0.69 (0.24, 1.99) | 0.49 |
| **Medications** |  | |  |  |  |  |
| **Paracetamol** |  | |  |  |  |  |
| No | 375/393 (95.4%) | | 1 |  | - | - |
| Yes | 10/10 (100.0%) | | 1 | - |
| **Aspirin (low or regular dose)** | | |  |  |  |  |
| No | 332/347 (95.7%) | | 1 |  | 0.35 | - |
| Yes | 53/56 (94.6%) | | 1.87 (0.50, 7.04) | 0.35 |
| **Over the counter anti-inflammatory medication** | | | |  |  |  |
| No | 367/385 (95.3%) | | 1 |  | - | - |
| Yes | 18/18 (100.0%) | | 1 | - |

**Legend: a** = adjusted for age (cubic spline), gender, mobility and history of previous influenza vaccination

**\*** age fitted in 10 year age groups rather than as cubic spline for this model due to very low numbers of failures in cubic spline groupings

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | | **Influenza A H3N2 - odds ratio for seroprotection** | | | | |
| **Patient demographic** | | **Number are seroprotected following vaccination (row %)** | **Adjusted OR**  **(95% CI)a** | **p** | **p value of LRT for null vs general association** | **p value of LRT for null vs linear association** |
| **Gender** | |  |  |  |  |  |
| Female | | 171/198 (86.4%) | 1 | 0.21 | 0.21 | - |
| Male | | 167/205 (81.5%) | 0.70 (0.40, 1.23) |
| **Age** | |  |  |  |  |  |
| < 30 years | | 39/48 (81.3%) | 1 |  | 0.44 | 0.11 |
| 31-40 years | | 85/105 (81.0%) | 0.87 (0.36, 2.13) | 0.77 |
| 41-50 years | | 85/105 (81.0%) | 0.98 (0.40, 2.41) | 0.97 |
| 51-60 years | | 95/107 (88.8%) | 1.67 (0.64, 4.36) | 0.29 |
| > 60 years | | 34/38 (89.5%) | 1.73 (0.48, 6.23) | 0.40 |
| **Current smoker** | | |  |  |  |  |
| No | | 273/326 (83.7%) | 1 |  | 0.58 | - |
| Yes | | 65/77 (84.4%) | 1.22 (0.60, 2.49) | 0.58 |
| **Previous flu vaccine at any time in the past (except last 3 months)** | | | |  |  |  |
| No | | 90/119 (75.6%) | 1 |  | 0.01 | - |
| Yes | | 248/284 (87.3%) | 2.09 (1.18, 3.69) | 0.01 |
| **H1N1 vaccine in last flu season** | | |  |  |  |  |
| No | | 153/176 (86.9%) | 1\* |  | 0.95 | - |
| Yes | | 94/107 (87.9%) | 1.03 (0.48, 2.19) | 0.95 |
| Don't know | | 1/1 (100.0%) |  |  |
| **Mobility (number of addresses since birth or 1970 if born prior to 1970)** | | | |  |  |  |
| 1-3 | | 44/53 (83.0%) | 1 |  |  |  |
| 4-6 | | 171/204 (83.8%) | 1.16 (0.50, 2.70) | 0.72 |  |  |
| 7-9 | | 71/86 (82.6%) | 1.05 (0.40, 2.74) | 0.92 |  |  |
| ≥10 | | 52/60 (86.7%) | 1.32 (0.45, 3.91) | 0.62 | 0.95 | 0.74 |
| **Medical comorbidities** | | |  |  |  |  |
| **Asthma** |  | |  |  |  |  |
| No | 317/379 (83.6%) | | 1 |  | 0.73 | - |
| Yes | 21/24 (87.5%) | | 1.25 (0.35, 4.47) | 0.73 |
| **Chronic obstructive pulmonary disease** | | |  |  |  |  |
| No | 333/398 (83.7%) | | 1 |  | - | - |
| Yes | 5/5 (100.0%) | | 1 | - |
| **Any lung disease** | | |  |  |  |  |
| No | 312/374 (83.4%) | | 1 |  | 0.55 | - |
| Yes | 26/29 (89.7%) | | 1.46 (0.42, 5.12) | 0.55 |
| **Diabetes** |  | |  |  |  |  |
| No | 301/363 (82.9%) | | 1 |  | 0.43 | - |
| Yes | 37/40 (92.5%) | | 1.65 (0.47, 5.79) | 0.43 |
| **Kidney disease** | | |  |  |  |  |
| No | 336/401 (83.8%) | | 1 |  | - | - |
| Yes | 2/2 (100.0%) | | 1 | - |
| **Heart disease** |  | |  |  |  |  |
| No | 326/391 (83.4%) | | 1 |  | - | - |
| Yes | 12/12 (100.0%) | | 1 | - |
| **Liver disease** |  | |  |  |  |  |
| No | 334/399 (83.7%) | | 1 |  | - | - |
| Yes | 4/4 (100.0%) | | 1 | - |
| **Hypertension** |  | |  |  |  |  |
| No | 335/400 (83.8%) | | 1 |  | - | - |
| Yes | 3/3 (100.0%) | | 1 | - |
| **Any of conditions above** | | |  |  |  |  |
| No | 267/326 (81.9%) | | 1 |  | 0.14 | - |
| Yes | 71/77 (92.2%) | | 1.99 (0.80, 4.95) | 0.14 |
| **Medications** |  | |  |  |  |  |
| **Paracetamol** |  | |  |  |  |  |
| No | 330/393 (84.0%) | | 1 |  | 0.62 | - |
| Yes | 8/10 (80.0%) | | 0.66 (0.13, 3.36) | 0.62 |
| **Aspirin (low or regular dose)** | | |  |  |  |  |
| No | 292/347 (84.1%) | | 1 |  | 0.17 | - |
| Yes | 46/56 (82.1%) | | 0.55 (0.24, 1.30) | 0.17 |
| **Over the counter anti-inflammatory medication** | | |  |  |  |  |
| No | 324/385 (84.2%) | | 1 |  | 0.46 | - |
| Yes | 14/18 (77.8%) | | 0.63 (0.19, 2.10) | 0.46 |

**Legend: a** = adjusted for age (cubic spline), gender, mobility and history of previous influenza vaccination