**Supplement**

Table 1. Marginal mean estimates of hazard ratios for future hospitalization for patient groups defined by age, Canadian triage and acuity scale and number of previous emergency department visits (accounting for “bounce back” visits)

|  |  |  |  |
| --- | --- | --- | --- |
| **Age**  **(years)** | **CTASa** | **Previous EDb  Visit Count** | **HRc (95% CId)** |
| <6 | Standard | 0 | 1.0 (0.5, 2.1) |
| 6+ | Standard | 0 | 1.2 (0.6, 2.4) |
| <6 | Urgency | 0 | 2.0 (1.4, 2.8) |
| 6+ | Urgency | 0 | 2.5 (1.7, 3.7) |
| <6 | Emergency | 0 | 2.8 (2.0, 4.0) |
| 6+ | Emergency | 0 | 3.5 (2.0, 6.1) |
| <6 | Standard | 1 | 2.9 (1.3, 6.5) |
| 6+ | Standard | 1 | 3.5 (1.7, 7.1) |
| <6 | Urgency | 1 | 5.7 (2.9, 11.1) |
| 6+ | Urgency | 1 | 7.0 (3.8, 13.2) |
| <6 | Emergency | 1 | 7.98 (4.58, 13.91) |
| 6+ | Emergency | 1 | 9.9 (5.1, 19.0) |
| <6 | Standard | 2+ | 4.4 (1.7, 11.8) |
| 6+ | Standard | 2+ | 5.5 (2.1, 14.4) |
| <6 | Urgency | 2+ | 8.9 (4.0, 19.9) |
| 6+ | Urgency | 2+ | 11.0 (4.6, 26.4) |
| <6 | Emergency | 2+ | 12.4 (5.0, 30.9) |
| 6+ | Emergency | 2+ | 15.3 (5.3, 44.1) |

aCanadian Triage and Acuity Scale

bEmergency Department

cHazard Ratio

dConfidence Interval

Table 2. Marginal mean estimates of hazard ratios for repeat ED visits for patient groups defined by age, Canadian triage and acuity scale (CTAS) and number of previous emergency department (ED) visits (accounting for “bounce back” visits)

|  |  |  |  |
| --- | --- | --- | --- |
| **Age (years)** | **CTASa** | **Previous EDb  Visit Count** | **HRc (95% CId)** |
| <6 | Standard | 0 | 1.0 (0.8, 1.3) |
| 6+ | Standard | 0 | 0.9 (0.8, 1.2) |
| <6 | Urgency | 0 | 1.4 (1.3, 1.6) |
| 6+ | Urgency | 0 | 1.3 (1.2, 1.6) |
| <6 | Emergency | 0 | 2.2 (1.9, 2.5) |
| 6+ | Emergency | 0 | 2.1 (1.7, 2.5) |
| <6 | Standard | 1 | 2.3 (1.6, 3.5) |
| 6+ | Standard | 1 | 2.2 (1.5, 3.3) |
| <6 | Urgency | 1 | 3.4 (2.4, 4.8) |
| 6+ | Urgency | 1 | 3.1 (2.2, 4.4) |
| <6 | Emergency | 1 | 5.2 (3.6, 7.4) |
| 6+ | Emergency | 1 | 4.9 (3.4, 7.0) |
| <6 | Standard | 2+ | 4.6 (2.6, 8.3) |
| 6+ | Standard | 2+ | 4.3 (2.4, 7.9) |
| <6 | Urgency | 2+ | 6.6 (3.8, 11.5) |
| 6+ | Urgency | 2+ | 6.2 (3.5, 11.0) |
| <6 | Emergency | 2+ | 10.2 (5.8, 17.9) |
| 6+ | Emergency | 2+ | 9.5 (5.3, 17.2) |

aCanadian Triage and Acuity Scale

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Table 3. Baseline characteristics at index emergency department visit (not accounting for “bounce back” visits)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Overall, % (n), N=2688 | Visits=0, % (n), N=2563 | Visits=1, % (n), N=94 | Visits>=2, % (n), N=31 |
| Age (years) |  |  |  |  |
| <6 | 58.8 (1580) | 58.8 (1506) | 57.4 (54) | 64.5 (20) |
| 6+ | 41.2 (1108) | 41.2 (1057) | 42.6 (40) | 35.5 (11) |
| Sex |  |  |  |  |
| Male | 62.5 (1681) | 62.3 (1597) | 64.9 (61) | 74.2 (23) |
| Female | 37.5 (1007) | 37.7 (966) | 35.1 (33) | 25.8 (8) |
| CTASa level |  |  |  |  |
| Standard | 20.2 (544) | 20.6 (528) | 11.7 (11) | 16.1 (5) |
| Urgency | 46.9 (1261) | 46.5 (1193) | 56.4 (53) | 48.4 (15) |
| Emergency | 32.8 (883) | 32.9 (842) | 31.9 (30) | 35.5 (11) |

aCanadian Triage and Acuity Scale

Table 4. Cumulative incidence of hospitalization at one year by previous ED visit count (not accounting for “bounce back” visits)

|  |  |  |  |
| --- | --- | --- | --- |
| **Previous ED Visit Count** | **Cumulative incidence** | **Lower 95% Confidence Limit** | **Upper 95% Confidence Limit** |
| 0 | 2.6 | 5.0 | 14.4 |
| 1 | 2.1 | 3.1 | 7.5 |
| 2+ | 3.4 | 8.3 | 26.7 |

Table 5: Cumulative incidence of repeat emergency department visit at one year by previous ED visit count (not accounting for “bounce back” visits)

|  |  |  |  |
| --- | --- | --- | --- |
| **Previous ED Visit Count** | **Cumulative incidence** | **Lower 95% Confidence Limit** | **Upper 95% Confidence Limit** |
| 0 | 20.1 | 39.4 | 61.3 |
| 1 | 18.6 | 30.3 | 44.9 |
| 2+ | 21.7 | 50.0 | 78.0 |

Table 6. Multivariable regression analysis of future hospitalization and repeat ED visit risk (not accounting for “bounce back” visits)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Outcome | | | |
|  | Asthma hospitalization | | Repeat EDa visits | |
| Predictor | N(ED visits)= 3393 | | N(ED visits)= 2688 | |
|  | HRc (95% CId) | p | HR (95% CI) | p |
| Age Group (years) |  | 0.14 |  | 0.60 |
| <6 | Reference |  | Reference |  |
| 6+ | 1.4 (0.9,2.2) |  | 1.0 (0.8,1.1) |  |
| Number of previous ED Visits |  | <0.001 |  | <0.001 |
| No previous visits | Reference |  | Reference |  |
| One previous visit | 2.3 (1.4,4.0) |  | 2.2 (1.6,3.1) |  |
| Two or more previous visits | 5.0 (2.5,10.1) |  | 4.3 (2.6,7.0) |  |
| Sex |  | 0.54 |  | 0.61 |
| Female | Reference |  | Reference |  |
| Male | 0.9 (0.6,1.3) |  | 1.0 (0.8,1.1) |  |
| CTASb level |  | <0.001 |  | <0.001 |
| Standard | Reference |  | Reference |  |
| Urgency | 2.9 (1.3,6.9) |  | 1.6 (1.2,2.1) |  |
| Emergency | 4.9 (2.0,11.8) |  | 2.5 (1.9,3.2) |  |

aEmergency Department

bCanadian Triage and Acuity Scale

cHazard Ratio

dConfidence Interval

Table 7. Marginal mean estimates of hazard ratios for future hospitalization for patient groups defined by age, Canadian triage and acuity scale and number of previous emergency department visits (not accounting for “bounce back” visits)

|  |  |  |  |
| --- | --- | --- | --- |
| **Age**  **(years)** | **CTASa** | **Previous EDb  Visit Count** | **HRc (95% CId)** |
| <6 | Standard | 0 | 1.0 (0.5, 2.2) |
| 6+ | Standard | 0 | 1.4 (0.7, 2.8) |
| <6 | Urgency | 0 | 2.9 (2.1, 4.0) |
| 6+ | Urgency | 0 | 4.1 (2.8, 5.9) |
| <6 | Emergency | 0 | 4.9 (3.5, 6.7) |
| 6+ | Emergency | 0 | 6.8 (4.1, 11.3) |
| <6 | Standard | 1 | 2.3 (1.0, 5.4) |
| 6+ | Standard | 1 | 3.3 (1.6, 6.7) |
| <6 | Urgency | 1 | 6.8 (3.7, 12.5) |
| 6+ | Urgency | 1 | 9.5 (5.3, 17.0) |
| <6 | Emergency | 1 | 11.3 (6.7, 19.3) |
| 6+ | Emergency | 1 | 15.8 (8.6, 29.1) |
| <6 | Standard | 2+ | 5.0 (2.0, 12.4) |
| 6+ | Standard | 2+ | 6.9 (2.9, 16.7) |
| <6 | Urgency | 2+ | 14.6 (7.2, 29.3) |
| 6+ | Urgency | 2+ | 20.3 (9.5, 43.6) |
| <6 | Emergency | 2+ | 24.2 (11.5, 50.8) |
| 6+ | Emergency | 2+ | 33.8 (14.1, 80.9) |

aCanadian Triage and Acuity Scale

bEmergency Department

cHazard Ratio

dConfidence Interval

Table 8. Marginal mean estimates of hazard ratios for repeat ED visits for patient groups defined by age, Canadian triage and acuity scale (CTAS) and number of previous emergency department (ED) visits (not accounting for “bounce back” visits)

|  |  |  |  |
| --- | --- | --- | --- |
| **Age**  **(years)** | **CTASa** | **Previous EDb  Visit Count** | **HRc (95% CId)** |
| <6 | Standard | 0 | 1.0 (0.8, 1.3) |
| 6+ | Standard | 0 | 1.0 (0.8, 1.2) |
| <6 | Urgency | 0 | 1.6 (1.4, 1.8) |
| 6+ | Urgency | 0 | 1.5 (1.3, 1.8) |
| <6 | Emergency | 0 | 2.5 (2.2, 2.8) |
| 6+ | Emergency | 0 | 2.3 (2.0, 2.8) |
| <6 | Standard | 1 | 2.2 (1.5, 3.3) |
| 6+ | Standard | 1 | 2.1 (1.4, 3.1) |
| <6 | Urgency | 1 | 3.5 (2.5, 4.9) |
| 6+ | Urgency | 1 | 3.35 (2.39, 4.68) |
| <6 | Emergency | 1 | 5.4 (3.8, 7.6) |
| 6+ | Emergency | 1 | 5.1 (3.6, 7.3) |
| <6 | Standard | 2+ | 4.3 (2.5, 7.3) |
| 6+ | Standard | 2+ | 4.1 (2.4, 7.0) |
| <6 | Urgency | 2+ | 6.8 (4.1, 11.3) |
| 6+ | Urgency | 2+ | 6.5 (3.9, 10.8) |
| <6 | Emergency | 2+ | 10.4 (6.3, 17.3) |
| 6+ | Emergency | 2+ | 10.0 (5.9, 16.8) |

aCanadian Triage and Acuity Scale

bEmergency Department

cHazard Ratio

dConfidence Interval

Figure 1. Cumulative incidence of future hospitalization (A) and repeat ED visits (B) as a function of sex



Figure 2. Cumulative incidence of future hospitalization (A) and repeat ED visits (B) as a function of ED visit count in the previous year (not accounting for “bounce back” visits)

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Figure 3. Cumulative incidence of future hospitalization (A) and repeat ED visits (B) as a function of CTAS (not accounting for “bounce back” visits)

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Standard: CTAS 4,5  
Urgency: CTAS 3  
Emergency: CTAS 1,2

Figure 4. Cumulative incidence of future hospitalization (A) and repeat ED visits (B) as a function of age (not accounting for “bounce back” visits)

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Figure 5. Cumulative incidence of future hospitalization (A) and repeat ED visits (B) as a function of age (not accounting for “bounce back” visits)

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Figure 6. Marginal mean estimates of hazard ratios for future hospitalization for patient groups defined by age, CTAS and number of previous ED visits (not accounting for “bounce back” visits)

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Estimates have been divided by the hazard ratio for the reference group (age under 6 years, standard CTAS and zero ED visits in the previous year). The bars represent the risk of future hospitalization in the other groups, compared to the reference group (which is the lowest risk group).

Figure 7. Marginal mean estimates of hazard ratios for repeat ED visits for patient groups defined by age, CTAS and number of previous ED visits (not accounting for “bounce back” visits)

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Estimates have been divided by the hazard ratio for the reference group (age under 6 years, standard CTAS and zero ED visits in the previous year). The bars represent the risk of future emergency department visit of the other groups, compared to the reference group.