

Table 2

|                                | Incorrect patient identification |             |                 | Extended EHR unavailability |             |                 | Failure to heed a computer-generated warning or alert |             |                 |
|--------------------------------|----------------------------------|-------------|-----------------|-----------------------------|-------------|-----------------|---|-------------|-----------------|
|                                | OR                               | 95% CI      | P               | OR                          | 95% CI      | P               | OR  | 95% CI      | P               |
| Intercept                      | 0,31                             | 0.23 - 0.42 | <b>&lt;.001</b> | 0,92                        | 0.69 - 1.21 | 0,547           | 0,39  | 0.28 - 0.54 | <b>&lt;.001</b> |
| <b>Profession</b>              |                                  |             |                 |                             |             |                 |   |             |                 |
| Registered Nurses              | 1,00                             | -           | -               | 1,00                        | -           | -               | 1,00  | -           | -               |
| Physicians                     | 1,11                             | 0.88 - 1.40 | 0,376           | 1,90                        | 1.52 - 2.38 | <b>&lt;.001</b> | 2,03  | 1.60 - 2.57 | <b>&lt;.001</b> |
| Clinical Clerks                | 0,83                             | 0.59 - 1.16 | 0,278           | 0,66                        | 0.49 - 0.89 | <b>0,006</b>    | 0,74  | 0.49 - 1.08 | 0,128           |
| Academic specialists           | 0,48                             | 0.28 - 0.78 | <b>0,005</b>    | 0,41                        | 0.27 - 0.61 | <b>&lt;.001</b> | 0,71  | 0.41 - 1.17 | 0,195           |
| <b>Clinical Unit</b>           |                                  |             |                 |                             |             |                 |   |             |                 |
| General Ward                   | 1,00                             | -           | -               | 1,00                        | -           | -               | 1,00  | -           | -               |
| Clin. Lab./Radiology           | 1,21                             | 0.91 - 1.62 | 0,187           | 0,57                        | 0.43 - 0.75 | <b>&lt;.001</b> | 0,38  | 0.25 - 0.56 | <b>&lt;.001</b> |
| Emergency room                 | 1,93                             | 1.35 - 2.76 | <b>&lt;.001</b> | 1,39                        | 0.98 - 1.99 | 0,068           | 1,30  | 0.89 - 1.89 | 0,170           |
| ICU/CCU                        | 0,91                             | 0.61 - 1.33 | 0,626           | 1,02                        | 0.73 - 1.43 | 0,906           | 0,73  | 0.48 - 1.10 | 0,139           |
| Labor ward                     | 0,70                             | 0.38 - 1.23 | 0,234           | 0,82                        | 0.50 - 1.34 | 0,424           | 0,97  | 0.55 - 1.66 | 0,912           |
| OR or procedure unit           | 1,79                             | 1.34 - 2.38 | <b>&lt;.001</b> | 1,44                        | 1.09 - 1.91 | <b>0,011</b>    | 0,93  | 0.68 - 1.27 | 0,650           |
| Outpatient unit                | 0,85                             | 0.67 - 1.08 | 0,194           | 0,87                        | 0.70 - 1.07 | 0,176           | 0,84  | 0.66 - 1.07 | 0,170           |
| Other                          | 1,04                             | 0.70 - 1.52 | 0,851           | 0,59                        | 0.42 - 0.84 | <b>0,003</b>    | 0,87  | 0.57 - 1.32 | 0,530           |
| <b>Professional Experience</b> |                                  |             |                 |                             |             |                 |   |             |                 |
| 0-5 years                      | 1,00                             | -           | -               | 1,00                        | -           | -               | 1,00  | -           | -               |
| 6-15 years                     | 1,10                             | 0.87 - 1.40 | 0,420           | 1,13                        | 0.91 - 1.40 | 0,275           | 1,18  | 0.91 - 1.52 | 0,216           |
| 16-25 years                    | 1,02                             | 0.79 - 1.33 | 0,853           | 1,24                        | 0.98 - 1.57 | 0,072           | 1,15  | 0.87 - 1.53 | 0,312           |
| 25+ years                      | 1,42                             | 1.09 - 1.84 | <b>0,009</b>    | 1,32                        | 1.04 - 1.67 | <b>0,024</b>    | 1,17  | 0.87 - 1.56 | 0,302           |
| <b>EHR training</b>            |                                  |             |                 |                             |             |                 |   |             |                 |
| Class Room Training            | 1,00                             | -           | -               | 1,00                        | -           | -               | 1,00  | -           | -               |
| eLearning                      | 0,93                             | 0.73 - 1.19 | 0,557           | 0,78                        | 0.63 - 0.98 | <b>0,030</b>    | 0,73  | 0.56 - 0.94 | <b>0,015</b>    |
| General                        | 1,31                             | 1.03 - 1.69 | <b>0,031</b>    | 1,15                        | 0.92 - 1.44 | 0,230           | 1,01  | 0.78 - 1.32 | 0,929           |
| IT Support                     | 1,25                             | 0.91 - 1.71 | 0,165           | 1,00                        | 0.75 - 1.34 | 0,987           | 1,00  | 0.71 - 1.40 | 0,996           |
| Other/no training              | 1,29                             | 0.92 - 1.81 | 0,133           | 1,28                        | 0.93 - 1.76 | 0,126           | 1,37  | 0.95 - 1.98 | 0,092           |
| <b>EHR skills</b>              |                                  |             |                 |                             |             |                 |   |             |                 |
| Good                           | 1,00                             | -           | -               | 1,00                        | -           | -               | 1,00  | -           | -               |
| Fair                           | 1,07                             | 0.87 - 1.31 | 0,515           | 0,93                        | 0.77 - 1.11 | 0,429           | 1,03  | 0.83 - 1.28 | 0,786           |
| Poor                           | 1,56                             | 1.20 - 2.03 | <b>0,001</b>    | 1,04                        | 0.81 - 1.33 | 0,752           | 1,58  | 1.19 - 2.08 | <b>0,001</b>    |
| Observations                   | 2598                             |             |                 | 2732                        |             |                 | 2291  |             |                 |

|                      | System-to-system interface errors |             |                 | Failure to find or use the most recent patient data |             |                 | EHR time measurement translational challenges |             |                 |
|----------------------|-----------------------------------|-------------|-----------------|---|-------------|-----------------|---|-------------|-----------------|
|                      | OR                                | 95% CI      | P               | OR  | 95% CI      | P               | OR  | 95% CI      | P               |
| Intercept            | 0,57                              | 0.42 - 0.77 | <b>&lt;.001</b> | 0,52  | 0.39 - 0.69 | <b>&lt;.001</b> | 0,47  | 0.34 - 0.65 | <b>&lt;.001</b> |
| <b>Profession</b>    |                                   |             |                 |   |             |                 |   |             |                 |
| Nurses               | 1,00                              | -           | -               | 1,00  | -           | -               | 1,00  | -           | -               |
| Physicians           | 2,37                              | 1.89 - 2.98 | <b>&lt;.001</b> | 2,51  | 2.00 - 3.15 | <b>&lt;.001</b> | 1,51  | 1.19 - 1.91 | <b>0,001</b>    |
| Clinical Clerks      | 0,90                              | 0.64 - 1.27 | 0,565           | 0,69  | 0.49 - 0.95 | <b>0,023</b>    | 0,51  | 0.32 - 0.77 | <b>0,002</b>    |
| Academic specialists | 0,75                              | 0.47 - 1.17 | 0,216           | 0,72  | 0.46 - 1.09 | 0,123           | 0,51  | 0.27 - 0.92 | <b>0,032</b>    |
| <b>Clinical Unit</b> |                                   |             |                 |   |             |                 |   |             |                 |
| General Ward         | 1,00                              | -           | -               | 1,00  | -           | -               | 1,00  | -           | -               |
| Clin. Lab./Radiology | 0,77                              | 0.57 - 1.03 | 0,083           | 0,76  | 0.57 - 1.02 | 0,072           | 0,73  | 0.53 - 1.01 | 0,059           |
| Emergency room       | 1,57                              | 1.09 - 2.25 | <b>0,015</b>    | 2,06  | 1.44 - 2.96 | <b>&lt;.001</b> | 1,98  | 1.36 - 2.89 | <b>&lt;.001</b> |
| ICU/CCU              | 1,69                              | 1.20 - 2.39 | <b>0,003</b>    | 1,07  | 0.76 - 1.51 | 0,691           | 1,23  | 0.85 - 1.76 | 0,264           |
| Labor ward           | 0,87                              | 0.51 - 1.47 | 0,613           | 0,86  | 0.51 - 1.42 | 0,567           | 0,56  | 0.28 - 1.04 | 0,079           |
| OR or procedure unit | 1,53                              | 1.14 - 2.04 | <b>0,004</b>    | 1,42  | 1.07 - 1.89 | <b>0,017</b>    | 1,67  | 1.22 - 2.28 | <b>0,001</b>    |

|                                |      |             |       |      |             |              |      |             |              |
|--------------------------------|------|-------------|-------|------|-------------|--------------|------|-------------|--------------|
| Outpatient unit                | 0,84 | 0.67 - 1.05 | 0,127 | 0,77 | 0.62 - 0.96 | <b>0,018</b> | 0,82 | 0.64 - 1.06 | 0,131        |
| Other                          | 1.00 | 0.68 - 1.45 | 0,981 | 0,82 | 0.56 - 1.19 | 0,295        | 1.10 | 0.72 - 1.67 | 0,655        |
| <b>Professional Experience</b> |      |             |       |      |             |              |      |             |              |
| 0-5 years                      | 1.00 | -           | -     | 1.00 | -           | -            | 1.00 | -           | -            |
| 6-15 years                     | 0,98 | 0.78 - 1.23 | 0,853 | 1,25 | 1.00 - 1.56 | 0,053        | 1,32 | 1.03 - 1.70 | <b>0,030</b> |
| 16-25 years                    | 1,01 | 0.79 - 1.29 | 0,938 | 1,31 | 1.03 - 1.67 | <b>0,030</b> | 1,49 | 1.14 - 1.97 | <b>0,004</b> |
| 25+ years                      | 0,98 | 0.76 - 1.27 | 0,894 | 1,33 | 1.04 - 1.71 | <b>0,025</b> | 1,29 | 0.97 - 1.72 | 0,084        |
| <b>EHR training</b>            |      |             |       |      |             |              |      |             |              |
| Class Room Training            | 1.00 | -           | -     | 1.00 | -           | -            | 1.00 | -           | -            |
| eLearning                      | 0,88 | 0.70 - 1.11 | 0,289 | 0,76 | 0.61 - 0.95 | <b>0,018</b> | 0,81 | 0.63 - 1.05 | 0,110        |
| General                        | 1,08 | 0.84 - 1.37 | 0,554 | 1,04 | 0.82 - 1.31 | 0,770        | 1,04 | 0.79 - 1.35 | 0,796        |
| IT Support                     | 1,05 | 0.77 - 1.43 | 0,76  | 1,12 | 0.83 - 1.50 | 0,459        | 0,92 | 0.66 - 1.28 | 0,613        |
| Other/no training              | 1.30 | 0.93 - 1.82 | 0,122 | 1,17 | 0.84 - 1.62 | 0,342        | 1,12 | 0.78 - 1.59 | 0,539        |
| <b>EHR skills</b>              |      |             |       |      |             |              |      |             |              |
| Good                           | 1.00 | -           | -     | 1.00 | -           | -            | 1.00 | -           | -            |
| Fair                           | 1,01 | 0.83 - 1.22 | 0,954 | 1,15 | 0.96 - 1.40 | 0,138        | 0,89 | 0.72 - 1.10 | 0,270        |
| Poor                           | 1,27 | 0.98 - 1.64 | 0,073 | 1,35 | 1.05 - 1.74 | <b>0,021</b> | 1,21 | 0.91 - 1.60 | 0,183        |
| <b>Observations</b>            |      | <b>2460</b> |       |      | <b>2618</b> |              |      | <b>2158</b> |              |

|                                | Incorrect item selected<br>from a list of items |             |                 | Open, incomplete or<br>missing orders |             |                 |
|--------------------------------|---|-------------|-----------------|---------------------------------------|-------------|-----------------|
|                                | OR  | 95% CI      | P               | OR                                    | 95% CI      | P               |
| Intercept                      | 0,23  | 0.16 - 0.33 | <b>&lt;.001</b> | 0,74                                  | 0.55 - 1.00 | 0,054           |
| <b>Profession</b>              |   |             |                 |                                       |             |                 |
| Nurses                         | 1.00  | -           | -               | 1.00                                  | -           | -               |
| Physicians                     | 1,99  | 1.57 - 2.52 | <b>&lt;.001</b> | 1.30                                  | 1.03 - 1.65 | <b>0,024</b>    |
| Clinical Clerks                | 0,95  | 0.65 - 1.39 | 0,813           | 0,77                                  | 0.55 - 1.06 | 0,114           |
| Academic specialists           | 0,69  | 0.39 - 1.16 | 0,184           | 0,38                                  | 0.21 - 0.66 | <b>0,001</b>    |
| <b>Clinical Unit</b>           |   |             |                 |                                       |             |                 |
| General Ward                   | 1.00  | -           | -               | 1.00                                  | -           | -               |
| Clin. Lab./Radiology           | 0,66  | 0.46 - 0.94 | <b>0,024</b>    | 0,39                                  | 0.25 - 0.58 | <b>&lt;.001</b> |
| Emergency room                 | 1,35  | 0.92 - 1.98 | 0,123           | 2,27                                  | 1.59 - 3.28 | <b>&lt;.001</b> |
| ICU/CCU                        | 1,05  | 0.70 - 1.54 | 0,816           | 1,09                                  | 0.77 - 1.54 | 0,632           |
| Labor ward                     | 0,53  | 0.26 - 1.00 | 0,063           | 0,75                                  | 0.44 - 1.25 | 0,281           |
| OR or procedure unit           | 1,27  | 0.93 - 1.73 | 0,134           | 1,37                                  | 1.03 - 1.83 | <b>0,032</b>    |
| Outpatient unit                | 0,83  | 0.65 - 1.07 | 0,152           | 0,69                                  | 0.55 - 0.86 | <b>0,001</b>    |
| Other                          | 0,85  | 0.54 - 1.29 | 0,444           | 0,83                                  | 0.56 - 1.22 | 0,354           |
| <b>Professional Experience</b> |   |             |                 |                                       |             |                 |
| 0-5 years                      | 1.00  | -           | -               | 1.00                                  | -           | -               |
| 6-15 years                     | 1.30  | 1.00 - 1.68 | 0,051           | 1,17                                  | 0.93 - 1.48 | 0,192           |
| 16-25 years                    | 1,29  | 0.97 - 1.71 | 0,082           | 1,12                                  | 0.87 - 1.44 | 0,397           |
| 25+ years                      | 1,52  | 1.14 - 2.04 | <b>0,005</b>    | 0,98                                  | 0.75 - 1.29 | 0,906           |
| <b>EHR training</b>            |   |             |                 |                                       |             |                 |
| Class Room Training            | 1.00  | -           | -               | 1.00                                  | -           | -               |
| eLearning                      | 1.00  | 0.77 - 1.30 | 0,982           | 0,91                                  | 0.72 - 1.15 | 0,426           |
| General                        | 1,24  | 0.95 - 1.63 | 0,12            | 1,32                                  | 1.03 - 1.69 | <b>0,028</b>    |
| IT Support                     | 1,22  | 0.87 - 1.72 | 0,25            | 0,92                                  | 0.66 - 1.27 | 0,613           |
| Other/no training              | 1,58  | 1.10 - 2.28 | <b>0,014</b>    | 1,15                                  | 0.81 - 1.65 | 0,434           |
| <b>EHR skills</b>              |   |             |                 |                                       |             |                 |
| Good                           | 1.00  | -           | -               | 1.00                                  | -           | -               |
| Fair                           | 1,09  | 0.88 - 1.36 | 0,446           | 0,79                                  | 0.64 - 0.96 | <b>0,018</b>    |
| Poor                           | 1,25  | 0.94 - 1.67 | 0,121           | 1.00                                  | 0.76 - 1.31 | 0,999           |
| <b>Observations</b>            |   | <b>2372</b> |                 |                                       | <b>2345</b> |                 |



