**Supplementary table 1: Instrumentation and Nosocomial Infections**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Procedure | No nosocomial infection | Nosocomial infection | P value | Before Nosocomial  Infection | After Nosocomial  Infection |
| Urinary Catheterization | 20% (484) | 58% (247) | <0.0001 | 60% (147/247) | 40% (100/247) |
| Thoracentesis | 5% (116) | 9% (37) | 0.0016 | 49% ( 18/ 37) | 51% ( 19/ 37) |
| Mechanical Ventilation | 8% (198) | 31% (133) | <0.0001 | 41% ( 55/133) | 59% ( 78/133) |
| Renal Replacement Therapy | 5% (129) | 21% (91) | <0.0001 | 44% ( 40/ 91) | 56% ( 51/ 91) |
| Central Line | 11% (267) | 46% (197) | <0.0001 | 41% ( 81/197) | 59% (116/197) |
| Parenteral Nutrition | 3% (69) | 11% (49) | <0.0001 | 63% ( 31/ 49) | 37% ( 18/ 49) |
| LVP | 27% (646) | 40% (173) | <0.0001 | 55% ( 95/173) | 45% ( 78/173) |
| TIPS | 4% (95) | 8% (33) | 0.0008 | 39% ( 13/ 33) | 61% ( 20/ 33) |
| Endoscopy | 29% (700) | 37% (162) | 0.0005 | 57% ( 92/162) | 43% ( 70/162) |

**Model for Predicting Nosocomial Infections – Split by Infection at Admission Yes/No**

Table S2: Prediction of Nosocomial Infection in patients without admission infections –Variables Available at Admission Only

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Variable** | | | | | **Estimate** | **Std Err** | **χ2** | ***p*-value** | **OR (95% CI)** | | | | |
| MELD | | | | | 0.0509 | 0.0090 | 31.67 | <0.0001 | 1.05 (1.03, 1.07) | | | | |
|  | | | | |  |  |  |  |  | | | | |
|  | | | | |  |  |  |  |  | | | | |
| |  |  | | --- | --- | | Model AUC:  Model Sensitivity:  Model Specificity:  Sensitivity at Youden Index:  Specificity at Youden Index: | 0.6177 (0.5756, 0.6581)  0.0000  1.0000  0.6286  0.5903 | | | | | | | | | |  |  |  |  |  | |
|  |  |  |  |  |  |

For this analysis *n* = 1,982

Table S3: Prediction of Nosocomial Infection in patients with admission infections –Variables Available at Admission Only

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Variable** | **Estimate** | **Std Err** | **χ2** | ***p*-value** | **OR (95% CI)** |
| Hosp. Past 6 Mo | 0.5277 | 0.2151 | 6.02 | 0.0142 | 1.70 (1.11, 2.58) |
| MELD | 0.0361 | 0.0115 | 9.91 | 0.0016 | 1.04 (1.01, 1.06) |
|  |  |  |  |  |  |
| |  |  | | --- | --- | | Model AUC:  Model Sensitivity:  Model Specificity:  Sensitivity at Youden Index:  Specificity at Youden Index: | 0.6087 (0.5596, 0.6557)  0.0000  1.0000  0.4830  0.6947 | |  |  |  |  |  |
| For this analysis , *n* = 475 |  |  |  |  |  |

Table S4:

Adjusting for Center differences

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **No Random Effect for Center** | | **Random Effect for Center** | |
| **Variable** | ***p*-value** | **OR (95% CI)** | ***p*-value** | **OR (95% CI)** |
| Diabetes | 0.02 | 1.33 (1.05, 1.68) | 0.011 | 1.36 (1.07, 1.72) |
| Admitted w/ Infection | <0.0001 | 2.93 (2.33, 3.68) | <0.0001 | 2.85 (2.26, 3.61) |
| Lactulose at Admission | 0.003 | 1.43 (1.13, 1.81) | 0.012 | 1.36 (1.07, 1.73) |
| WBC | 0.018 | 1.02 (1.00, 1.04) | 0.041 | 1.02 (1.00, 1.04) |
| MELD | <0.0001 | 1.04 (1.03, 1.06) | <0.0001 | 1.05 (1.03, 1.06) |

Table S5: Odds ratios of specific factors on admission and development of nosocomial infections.

| **Combination** | **OR** | **95% Lower**  **Limit** | **95% Upper**  **Limits** |
| --- | --- | --- | --- |
| 1-MELD | 2.1746 | 1.6842 | 2.8077 |
| 2-Lactulose\* | 1.2047 | 0.9029 | 1.6072 |
| 3-Rifaximin\* | 1.1752 | 0.8845 | 1.5614 |
| 4-PPI\* | 0.9922 | 0.7655 | 1.2862 |
| 5-SIRS | 1.3326 | 1.0157 | 1.7484 |
| MELD+Lactulose | 2.6196 | 1.8057 | 3.8005 |
| MELD+Rifaximin | 2.5555 | 1.7688 | 3.6922 |
| MELD+PPI | 2.1577 | 1.4928 | 3.1189 |
| MELD+SIRS | 2.8978 | 2.0127 | 4.1720 |
| Lactulose+Rifaximin | 1.4157 | 1.0339 | 1.9384 |
| Lactulose+PPI\* | 1.1953 | 0.8379 | 1.7052 |
| Lactulose+SIRS | 1.6053 | 1.0658 | 2.4179 |
| Rifaximin+PPI\* | 1.1661 | 0.8041 | 1.6910 |
| Rifaximin+SIRS | 1.5660 | 1.0574 | 2.3193 |
| PPI+SIRS\* | 1.3222 | 0.9034 | 1.9353 |
| MELD+Lactulose+Rifaximin | 3.0785 | 2.1079 | 4.4961 |
| MELD+Lactulose+PPI | 2.5993 | 1.6914 | 3.9946 |
| MELD+Lactulose+SIRS | 3.4908 | 2.1912 | 5.5613 |
| MELD+Rifaximin+PPI | 2.5357 | 1.6288 | 3.9475 |
| MELD+Rifaximin+SIRS | 3.4054 | 2.1709 | 5.3418 |
| MELD+PPI+SIRS | 2.8753 | 1.8237 | 4.5332 |
| Lactulose+Rifaximin+PPI\* | 1.4047 | 0.9769 | 2.0199 |
| Lactulose+Rifaximin+SIRS | 1.8865 | 1.2297 | 2.8941 |
| Lactulose+PPI+SIRS | 1.5928 | 1.0020 | 2.5321 |
| Rifaximin+PPI+SIRS\* | 1.5539 | 0.9766 | 2.4723 |
| MELD+Lactulose+Rifaximin+PPI | 3.0547 | 1.9992 | 4.6674 |
| MELD+Lactulose+Rifaximin+SIRS | 4.1023 | 2.5620 | 6.5688 |
| MELD+Lactulose+PPI+SIRS | 3.3790 | 2.0151 | 5.6661 |
| MELD+Rifaximin+PPI+SIRS | 3.3790 | 2.0151 | 5.6661 |
| Lactulose+Rifaximin+PPI+SIRS | 1.8719 | 1.1706 | 2.9931 |
| MELD+Lactulose+Rifaximin+PPI+SIRS | 4.0705 | 2.4400 | 6.7906 |

MELD=MELD>20, SIRS: systemic inflammatory response syndrome, PPI: proton pump inhibitor,\*=not significant