**Appendix: Supplemental Material**

Figure A.1 Determination of Costs for Four Sub-Groups of Sepsis ICU Patients

* Given the **marginal cost of AKI,** the **estimated cost for survivor and non-survivor cohorts** and **the distribution of patients in each sub-group (shares)** we calculate the cost for each of the four sub-groups: AKI/Death, AKI/Live, no AKI/Death, no AKI/Live
* For non-survivors (we do the analogous exercise for survivors):

$$\left(1\right) Avg. Cost\_{Non-Survivor}=\frac{\left[Share\_{No AKI | Death}\*Cost\_{No AKI | Death}\right]+\left[Share\_{AKI | Death}\*Cost\_{AKI | Death}\right]}{Share\_{No AKI | Death}+Share\_{AKI | Death}}$$

$$\left(2\right) Cost\_{AKI | Death}=Cost\_{No AKI | Death}+Marginal Cost\_{AKI }$$

$$\left(3\right) Cost\_{No AKI | Death}=Avg. Cost\_{Non-Survivor}-\left[\frac{Share\_{AKI | Death}\*Marginal Cost\_{AKI}}{Share\_{No AKI | Death}+Share\_{AKI | Death}}\right]$$

Figure A.2: Joint Probabilities and Hospitalization Costs for ICU Sepsis Patients

Figure A.3 Sensitivity Analysis Tornado Diagram for 65 vs. 60 mmHg

****

AKI=Acute Kidney Injury

mmHg=Millimeters Mercury

RRT=Renal Replacement Therapy

MAP= Mean Arterial Pressure

Table A.1: Expected Savings for 5 mmHg Increased in MAP

|  |  |
| --- | --- |
| Expected Blood Pressure Level | Expected Mean Hospital Cost Savings for 5 mmHg Increase (95% CI) |
| 60 mmHg | $699 ($342-$1,116) |
| 55 mmHg | $974 ($432-$1,647) |
| 50 mmHg | $1,263 ($524-$2,176) |
| 45 mmHg | $1,493 ($611-$2,536) |

Table A.2: ICU Hospitalization Sepsis Costs for Survivors and Non-Survivors

|  |  |  |
| --- | --- | --- |
| **Description** | **Mean** **(Assumed Distribution Type)** | **Source** |
| ICU Provider Costs per Patient (Severe Sepsis) - Mean (2001 USD) | $34,436  | Ernst et al, 2006 |
| 2001 (June) PCE Index for Healthcare Services | 78.2 | US PCE |
| 2017 (Oct) PCE Index for Healthcare Services | 113.347 | US PCE |
| Est 2018 ICU Provider Costs per Patient (Sepsis) - Mean (2018 USD) | $49,936 [A] | Calculation |
| ICU Provider Costs per Survivor (Mean) | $29,195 | Adrie et al., 2005 |
| ICU Provider Costs per Non-Survivor (Mean) | $35,774 | Adrie et al., 2005 |
| ICU Provider Costs per Both (Mean) | $31,251 | Adrie et al., 2005 |
| Ratio of Survivor/Both Mean Costs | 0.93 [B] | Calculation |
| Ratio of Non-Survivor/Both Mean Costs | 1.14 [C] | Calculation |
|  |  |  |
| Mean Sepsis LOS 2001 | 8.23 | HCUP |
| Mean Sepsis LOS 2016 | 7.34 | HCUP |
| Ratio of LOS 2016/LOS 2001 | .89 [D] | Calculation |
|  |  |  |
| Est. ICU Provider Costs per Survivor (Sepsis)  | $41,575 [A\*B\*D](gamma) | Calculation |
| Est. ICU Provider Costs per Non-Survivor (Sepsis)  | $50,944[A\*C\*D] (gamma)  | Calculation |

Table A.3: Acute Kidney Injury Costs

|  |  |  |
| --- | --- | --- |
| **Description** | **Mean** **(Distribution Type)** | **Source** |
| Marginal Cost of AKI hospitalized patient | $1,795  | Silver et al. |
| Marginal Cost of AKI hospitalized patient with dialysis | $11,016  | Silver et al. |
| 2012 (July) PCE Index for Healthcare Services | 106.6 | US PCE |
| 2017 (Oct) PCE Index for Healthcare Services | 113.3 | US PCE |
| 2018 Est. Marginal Cost of AKI hospitalized patient (adjusting for patient and hospital characteristics) | $1,908 (Gamma) | Calculation |
| 2018 Est. Marginal Cost of AKI hospitalized patient with dialysis (adjusting for patient and hospital characteristics) | $11,711 (Gamma) | Calculation |
| Share of AKI|Sepsis requiring RRT (renal replacement therapy) | 0.72(Beta) | Bagshaw et al., 2007 |