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**Appendix 1: Value Equation**

**Equation 1: Patient Value**

$$P_{Value} = \frac{Wt\left(\frac{\Delta P_{PROMIS}}{I\bar{x}(\Delta P_{PROMIS})}\right) + Wt\left(\frac{\Delta P_{KOOS/HOOS}}{I\bar{x}(\Delta P_{KOOS/HOOS})}\right) + Wt\left(\frac{\Delta P_{M-SANE}}{I\bar{x}(\Delta P_{M-SANE})}\right) + Wt(P_{Comp}) + Wt(P_{PJI}) + Wt(P_{Readmit})}{\left(\frac{P_{Cost}}{I\bar{x}(P_{Cost})}\right)}$$

*Note:* Where *Wt* is the modified Delphi Method defined weight, *P* represented individual patient scores, and *I $\bar{x}$*  represents institutional average scores.  $\Delta P$  is the change in PROM scores from pre-op to post-op. *Comp* is 90-day complication, *PJI* is 90-day primary joint infection, and *Readmit* is 90-day readmission. Note, the M-SANE and PROMIS-GF scales are rescaled to a range of 0-100.

**Sample equation for TKA patient A with lowest value score in dataset:**

$$0.29 = \frac{0.12\left(\frac{6.34}{11.75}\right) + 0.19\left(\frac{2.37}{20.01}\right) + 0.13\left(\frac{0}{38.31}\right) + 0.17(0) + 0.19(1) + 0.20(0)}{\left(\frac{95}{100}\right)}$$

**Sample equation for TKA patient B with highest value score in dataset:**

$$2.14 = \frac{0.12\left(\frac{40.73}{11.75}\right) + 0.19\left(\frac{49.99}{20.01}\right) + 0.13\left(\frac{80.00}{38.31}\right) + 0.17(1) + 0.19(1) + 0.20(1)}{\left(\frac{80}{100}\right)}$$

*Note:* the M-SANE and PROMIS-GF scales are rescaled to a range of 0-100 utilizing the *scales* package (v.0.4.1) in the R environment. For binary variables (i.e., complications, PJI, and readmission), 0=yes and 1=no. As an example, patient A experienced a readmission and a complication while patient B did not experience these outcomes. For the purposes of these example equations, cost has been rescaled; both TKA procedures for example patients were less costly than the institutional average cost.



### Appendix 3: Procedure Complications

#### *Procedure 90-Day Complications*

<b>Diagnosis Description</b>	<b>Procedure</b>	<b>ICD-10</b>	<b>Count</b>
Postoperative anemia due to acute blood loss	THA	D62	18
Acute UTI (urinary tract infection)	THA	N39.0	7
Dislocation of hip prosthesis	THA	T84.020	6
Postoperative anemia due to acute blood loss	TKA	D62	9
Pulmonary embolism	TKA	I26.99	2
Acute UTI (urinary tract infection)	TKA	N39.0	4
Failed total knee replacement	TKA	T84.0	2