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Appendix 1: Value Equation

Equation 1: Patient Value

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

Note: Where Wt is the modified Delphi Method defined weight, P represented individual patient scores, and $I\bar{x}$ represents institutional average scores. ΔP 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.

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Appendix 2: Results of the Delphi Process

OUTCOME	Surgeon A	Surgeon B	Surgeon C	Surgeon D	Surgeon E	Surgeon F	Average
PROMIS	25%	15%	9%	10%	10%	15%	14%
HOOS/KOOS	20%	30%	15%	20%	10%	10%	18%
M-SANE	15%	25%	1%	10%	10%	15%	13%
PJI	5%	5%	25%	30%	30%	20%	19%
READMISSION	20%	20%	25%	20%	20%	20%	21%
COMPLICATION	15%	5%	25%	10%	20%	20%	16%
Total	100%	100%	100%	100%	100%	100%	100%

Round one result of the Delphi Method

Round two result of the Delphi Method

Ουτςομε	Surgeon A	Surgeon B	Surgeon C	Surgeon D	Surgeon E	Surgeon F	Average
PROMIS	10%	15%	10%	10%	10%	15%	12%
HOOS/KOOS	20%	25%	25%	20%	15%	10%	19%
M-SANE	10%	25%	10%	10%	10%	15%	13%
PJI	20%	5%	10%	25%	30%	25%	19%
READMISSION	20%	20%	20%	20%	20%	20%	20%
COMPLICATION	20%	10%	25%	15%	15%	15%	17%
Total	100%	100%	100%	100%	100%	100%	100%

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Appendix 3: Procedure Complications

Procedure 90-Day Complications

Diagnosis Description	Procedure	ICD-10	Count
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