



Online Supplementary Material

The Clinical and Economic Value of Incorporating Monocyte Distribution Width Testing in the Detection of Occult Sepsis. JHEOR. 2026;13(1):218-225. doi:10.36469/jheor.2026.162383

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This supplementary material has been provided by the authors to give readers additional information about their work.



Table S1. Clinical Inputs

Average TTA	TTA, Hours
Normal MDW/SoC	
No suspicion	8.92
Low suspicion	7.37
High suspicion	3.64
Elevated MDW	
No suspicion	5.69
Low suspicion	5.10
High suspicion	3.38
ICU Rates**^a	ICU, %
Normal MDW/SoC	
No suspicion	43.57
Low suspicion	26.99
High suspicion	35.56
Elevated MDW	
No suspicion	36.62
Low suspicion	24.33
High suspicion	29.22
Hospitalization Rates*	Hospitalization, %
Normal MDW/SoC	
No suspicion	98.93
Low suspicion	98.37
High suspicion	100.00
Elevated MDW	
No suspicion	99.26
Low suspicion	98.80
High suspicion	99.75
Mortality^a	Mortality Rates
Normal MDW/SoC	
No suspicion	7.50
Low suspicion	3.62
High suspicion	11.11
Elevated MDW	
No suspicion	2.49
Low suspicion	0.10
High suspicion	10.71

Septic Shock^a	Septic Shock Rate, %	
Normal MDW/SoC		
No suspicion	14.29	
Low suspicion	15.94	
High suspicion	26.67	
Elevated MDW		
No suspicion	15.19	
Low suspicion	16.58	
High suspicion	26.74	
Readmissions^b	Readmission Rate, %	
Low suspicion of sepsis	11.10	
Moderate/high suspicion	12.30	
Septic shock	13.60	
Average Length of Stay^a	Hospital LOS, Days	ED LOS, Hours
Normal MDW/SoC		
No suspicion	10.59	7.26
Low suspicion	8.12	8.03
High suspicion	7.85	7.85
Elevated MDW		
No suspicion	9.56	7.71
Low suspicion	7.39	8.35
High suspicion	7.77	7.92

* Sourced using proprietary manufacturer internal trial dataset

^a The model allowed users to toggle between trial data and estimated rates based on time to antibiotic administration (TTA) regression from Ferrer et al. (2014)³⁴. See Table S3-S5 and Figure S2-S4 for results.

^b Trial data did not report any readmissions, so the model used Paoli et al., 2018 to assign readmission rates¹². Patients without organ dysfunction were assigned to the no suspicion group, those with severe sepsis to low or high suspicion groups, and patients with septic shock used the corresponding readmission probability.

Abbreviations: ED, emergency department; ICU, intensive care unit; LOS, length of stay; MDW, monocyte distribution width; SoC, standard of care.; TTA, time to antibiotic administration.

Table S2. Clinical Outcomes Among All Sepsis Levels (Unadjusted TTA)

	SoC	Normal MDW	Elevated MDW	MDW Total	Difference
ICU count	0.00	0.00	0.00	0.00	0.00
Septic shock count	0.63	0.18	0.46	0.64	0.01
Mortality count	0.38	0.11	0.24	0.35	-0.03
Readmission count	0.12	0.03	0.09	0.12	0.00
Hospitalization	0.00	0.00	0.00	0.00	0.00
IP LOS, days	12.83	3.71	8.55	12.25	-0.58
ED LOS, hours	7.78	7.78	5.77	13.55	5.77
ICU LOS, days	5.65	1.63	3.60	5.23	-0.42

Abbreviations: ED, emergency department; ICU, intensive care unit; LOS, length of stay; MDW, monocyte distribution width; SoC, standard of care.; TTA, time to antibiotic administration.

Table S3. Clinical Outcomes Among Patients with No Suspicion of Sepsis (Unadjusted TTA)

	SoC	Normal MDW	Elevated MDW	MDW Total	Difference
ICU count	0.00	0.00	0.00	0.00	0.00
Septic shock count	0.19	0.06	0.11	0.16	-0.03
Mortality count	0.12	0.04	0.06	0.09	-0.03
Readmission count	0.03	0.01	0.02	0.03	0.00
Hospitalization	0.00	0.00	0.00	0.00	0.00
IP LOS, days	4.04	1.17	2.07	3.23	-0.81
ED LOS, hours	2.21	2.21	1.30	3.50	1.30
ICU LOS, days	1.82	0.52	0.88	1.41	-0.41

Abbreviations: ED, emergency department; ICU, intensive care unit; LOS, length of stay; MDW, monocyte distribution width; SoC, standard of care.; TTA, time to antibiotic administration.

Table S4. Clinical Outcomes Among Patients with Low Suspicion of Sepsis (Unadjusted TTA)

	SoC	Normal MDW	Elevated MDW	MDW Total	Difference
ICU count	0.00	0.00	0.00	0.00	0.00
Septic shock count	0.38	0.11	0.27	0.38	0.00
Mortality count	0.23	0.07	0.14	0.21	-0.02
Readmission count	0.07	0.02	0.05	0.07	0.00
Hospitalization	0.00	0.00	0.00	0.00	0.00
IP LOS, days	7.66	2.21	5.05	7.26	-0.40
ED LOS, hours	4.80	4.80	3.49	8.30	3.49
ICU LOS, days	3.37	0.97	2.13	3.11	-0.26

Abbreviations: ED, emergency department; ICU, intensive care unit; LOS, length of stay; MDW, monocyte distribution width; SoC, standard of care.; TTA, time to antibiotic administration.

Table S5. Clinical Outcomes Among All Sepsis Levels (Adjusted TTA)

	SoC	MDW			Difference
		Normal	Elevated	Total	
ICU count	0.33	0.09	0.20	0.29	-0.03
Septic shock count	0.16	0.05	0.13	0.18	0.01
Mortality count	0.06	0.02	0.02	0.03	-0.02
Readmission count	0.12	0.03	0.09	0.12	0.00
Hospitalization	0.99	0.28	0.70	0.99	0.00
IP LOS, days	7.82	2.26	5.13	7.39	-0.42
ED LOS, hours	7.78	7.78	5.77	13.55	5.77
ICU LOS, days	0.92	0.26	0.48	0.75	-0.17

Abbreviations: ED, emergency department; ICU, intensive care unit; LOS, length of stay; MDW, monocyte distribution width; SoC, standard of care.; TTA, time to antibiotic administration.

Table S6. Budget Impact Analysis – Cost Comparison Breakdown (Adjusted TTA)

	Reference Scenario (0% MDW Utilization)			New Scenario (100% MDW Utilization)		
	SoC	MDW	Total	SoC	MDW	Total
Software licensing cost	\$0	\$0	\$0	\$0	\$135	\$1001
Machine costs	\$0	\$0	\$0	\$0	\$135	\$1001
Hospitalization	\$24,024	\$0	\$24,024	\$0	\$22,718	\$22,718
ICU	\$8,056	\$0	\$8,056	\$0	\$6,566	\$6,566
ED	\$633	\$0	\$633	\$0	\$653	\$653
Readmissions	\$2,270	\$0	\$2,270	\$0	\$2,366	\$2,366
Septic shock	\$2,720	\$0	\$2,720	\$0	\$2,901	\$2,901
Total	\$37,703	\$0	\$37,703	\$0	\$36,340	\$36,340

Abbreviations: ED, emergency department; ICU, intensive care unit; LOS, length of stay; MDW, monocyte distribution width; SoC, standard of care.; TTA, time to antibiotic administration.

Note: The *Reference Scenario* assumes 0% MDW uptake (standard of care only), while the *New Scenario* assumes 100% MDW uptake among patients presenting to the ED. The analysis models a population of 1,000 ED visits per month with a sepsis prevalence of 0.3%.

Table S7. Inputs from Ferrer et al³⁴ to Calculate Regression Coefficients

	Time to Antibiotic, Hours						
	1.0	2.0	3.0	4.0	5.0	6.0	7.0
N	4,728	4,595	3,020	1,734	1,037	640	2,239
Hospital mortality (%)	32.0	28.1	28.6	29.8	32.5	36.6	39.6
Septic shock (%)	69.6	62.7	61.2	60.4	66.0	68.9	61.3
Hospital LOS, days	13	10	10	11	12	12	14
ICU LOS, days	5.1	4.1	4.2	4.3	4.9	4.6	6.7

Abbreviations: ICU, intensive care unit; LOS, length of stay.

These inputs were plotted against time-to-antibiotic and a linear regression was performed to estimate regression coefficients for hospital mortality, septic shock, hospital LOS, and ICU LOS. The resulting coefficients were applied to time-to-antibiotic differences observed in the trial dataset to estimate modeled outcomes for patients with elevated MDW values. The resulting equations were as follows: Hospital LOS: $0.3214*(TTA) + 10.429$; ICU LOS: $0.2321*(TTA) + 3.9143$; Mortality Rate: $0.0155*(TTA) + 0.2628$; Septic Shock Rate: $-0.0028*(TTA) + 0.6539$

Table S8. Multi-Way Sensitivity Analysis – No Suspicion of Sepsis

	MDW -25%	MDW -10%	Base Case	MDW +10%	MDW +25%
SoC +25%	-\$6,665	-	-	-	-\$3,431
SoC +10%	-	-\$4,290	-	-\$2,997	-
Base Case	-	-	-\$2,707	-	-
SoC -10%	-	-\$2,417	-	-\$1,124	-
SoC -25%	-\$1,982	-	-	-	\$1,251

Abbreviations: MDW, monocyte distribution width; SoC, standard of care.

Note: Cells highlighted in green denote savings while using MDW diagnostics while cells in red denote costs while using MDW diagnostics.

Table S9. Multi-Way Sensitivity Analysis – Low Suspicion of Sepsis

	MDW -25%	MDW -10%	Base Case	MDW +10%	MDW +25%
SoC +25%	-\$7,107	-	-	-	-\$1,034
SoC +10%	-	-\$3,261	-	-\$832	-
Base Case	-	-	-\$697	-	-
SoC -10%	-	-\$561	-	\$1,868	-
SoC -25%	-\$359	-	-	-	\$5,714

Abbreviations: MDW, monocyte distribution width; SoC, standard of care.

Note: Cells highlighted in green denote savings while using MDW diagnostics while cells in red denote costs while using MDW diagnostics.

Figure S1. Equations Used to Estimate Clinical Outcomes From Time to Antibiotic Administration (TTA)

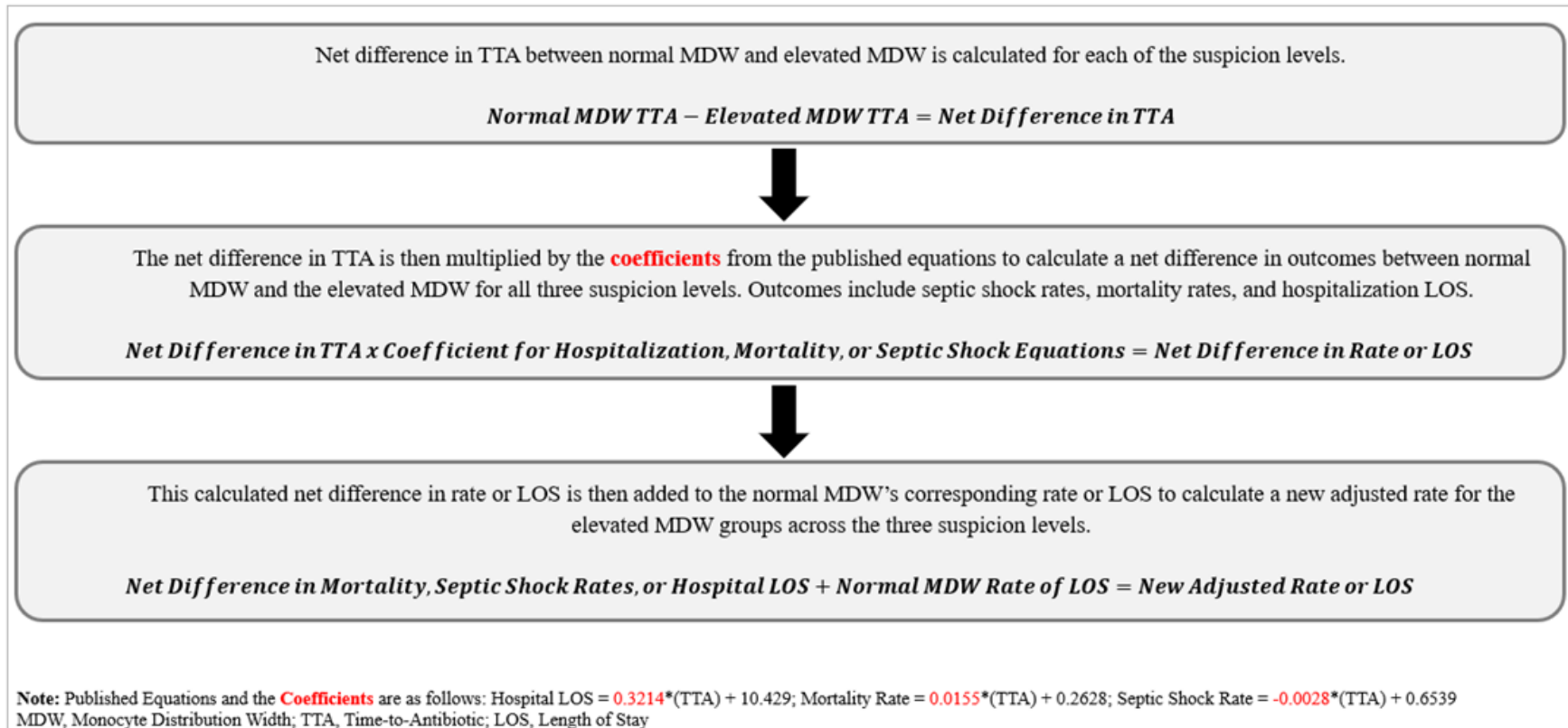
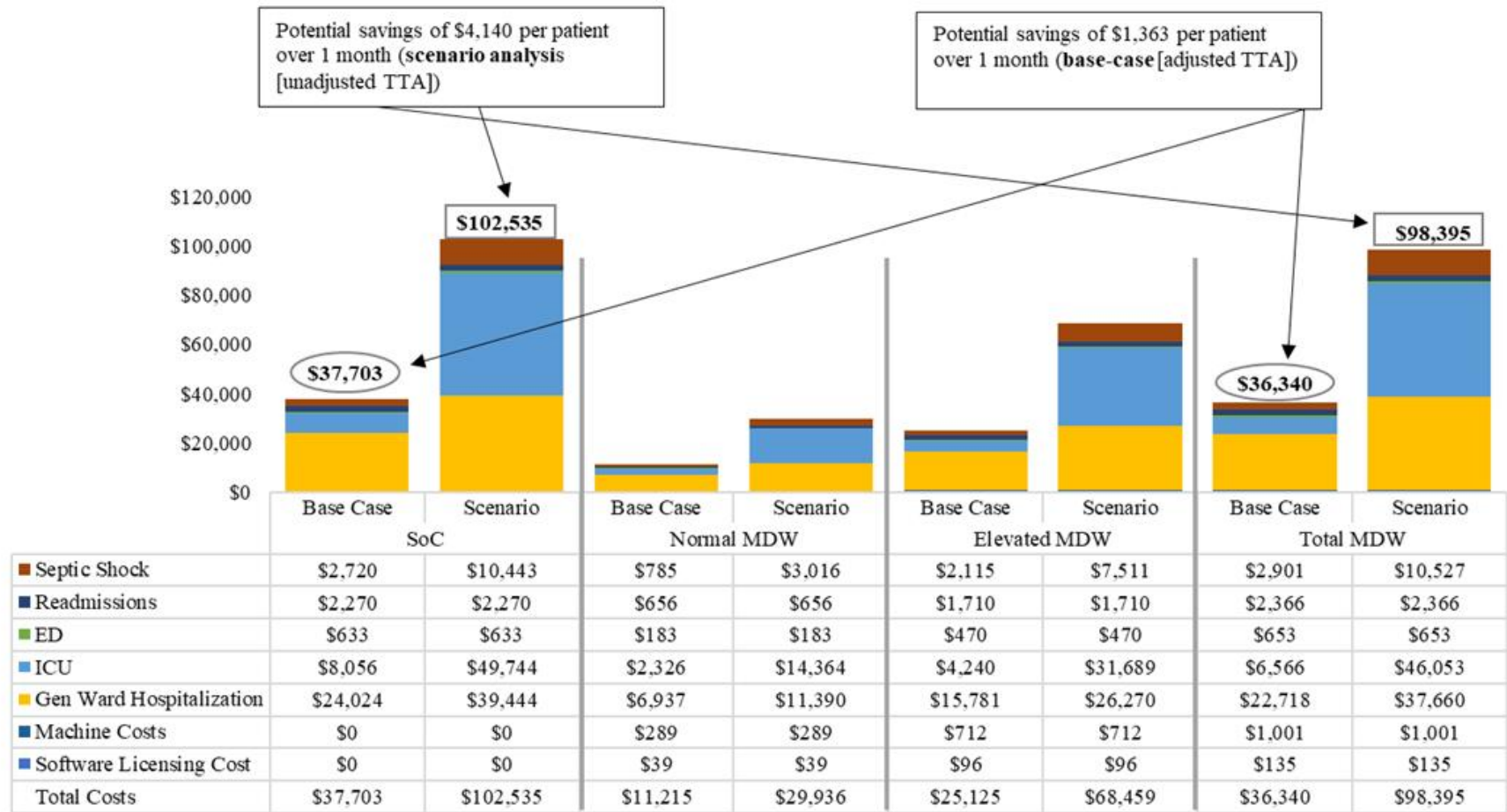
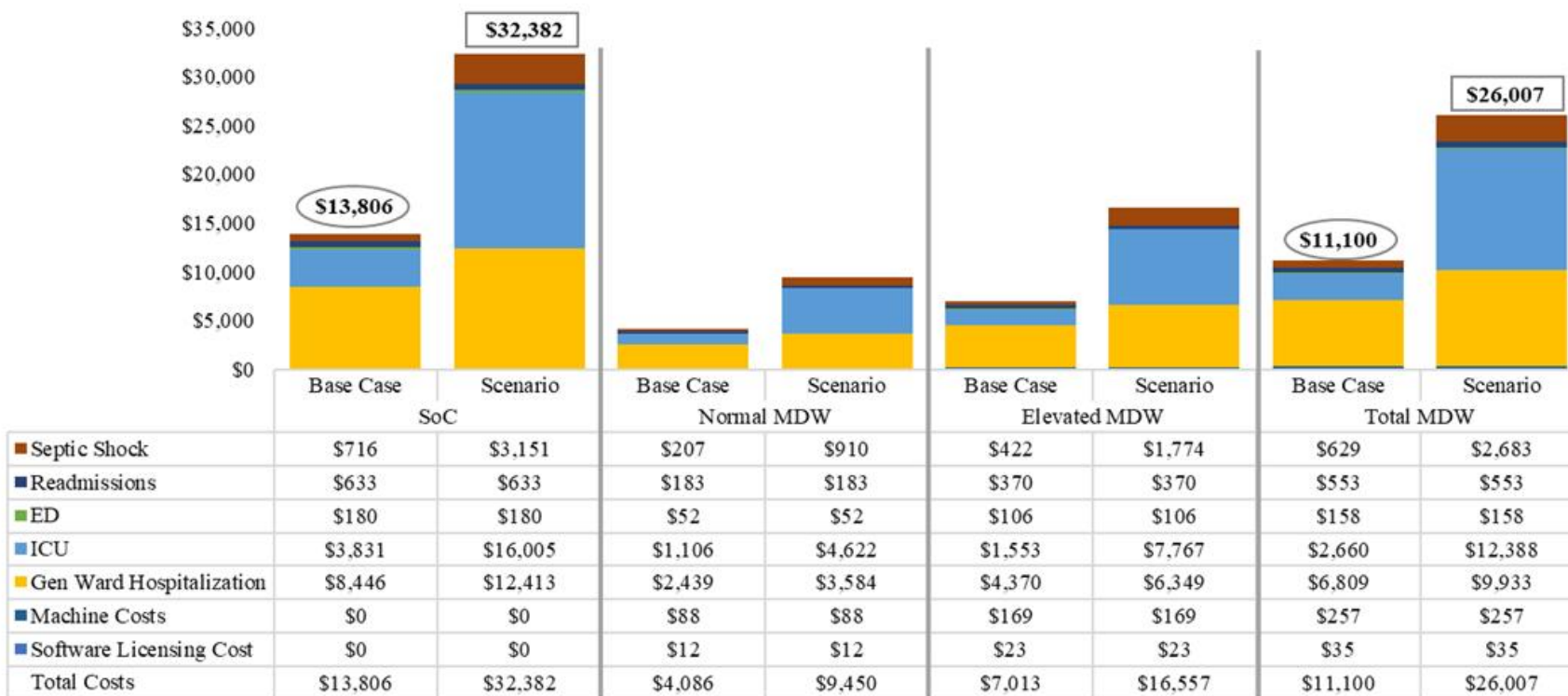


Figure S2. Total Costs Among All Sepsis Levels



Note: Base case reflects clinical and economic outcomes using **adjusted TTA values** across arms. Scenario reflects outcomes using **unadjusted TTA values**.

Figure S3. Total Costs Among Patients with No Suspicion of Sepsis



Note: Base case reflects clinical and economic outcomes using **adjusted TTA values** across arms. Scenario reflects outcomes using **unadjusted TTA values**.

Figure S4. Total Costs Among Patients with Low Suspicion of Sepsis

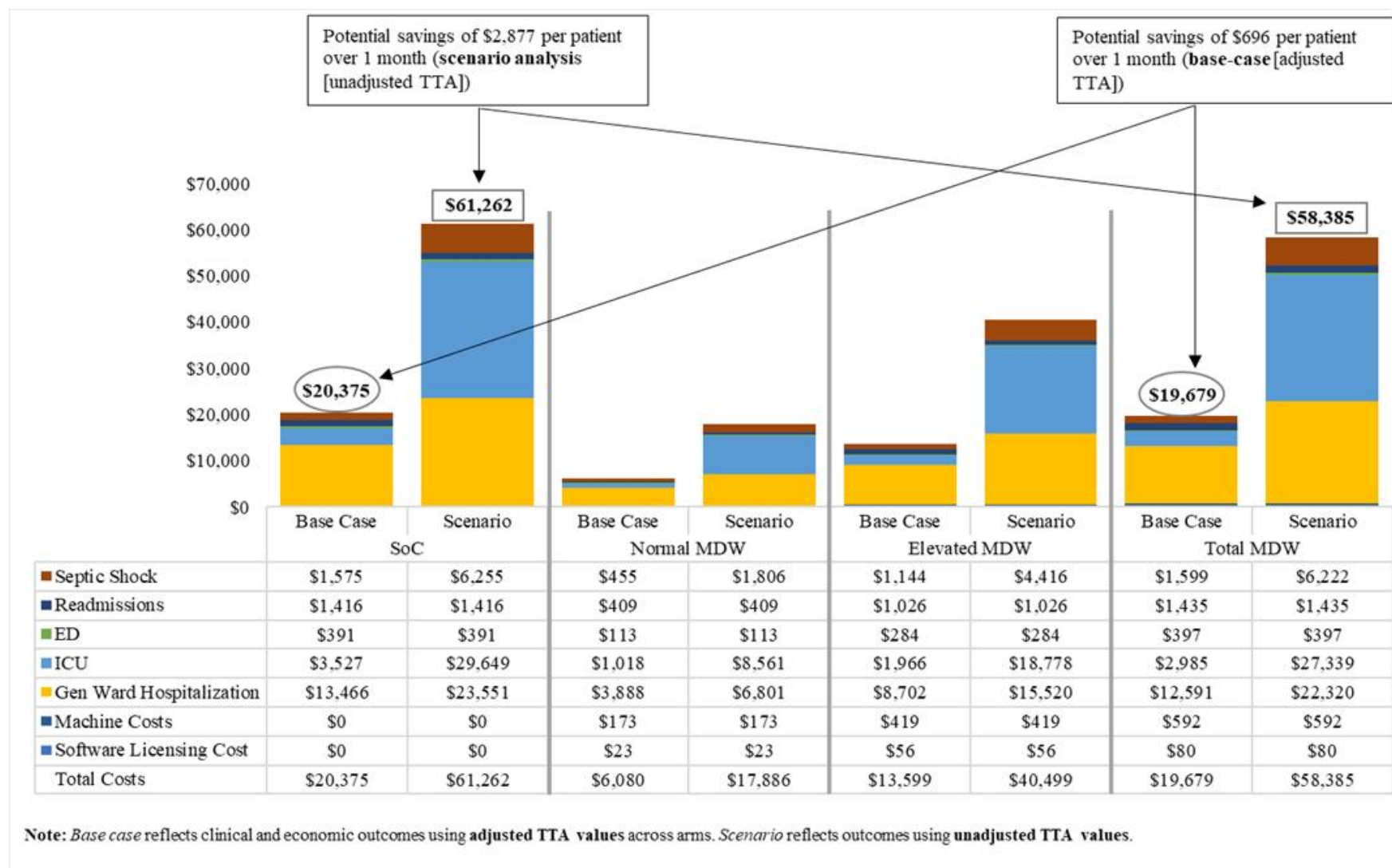
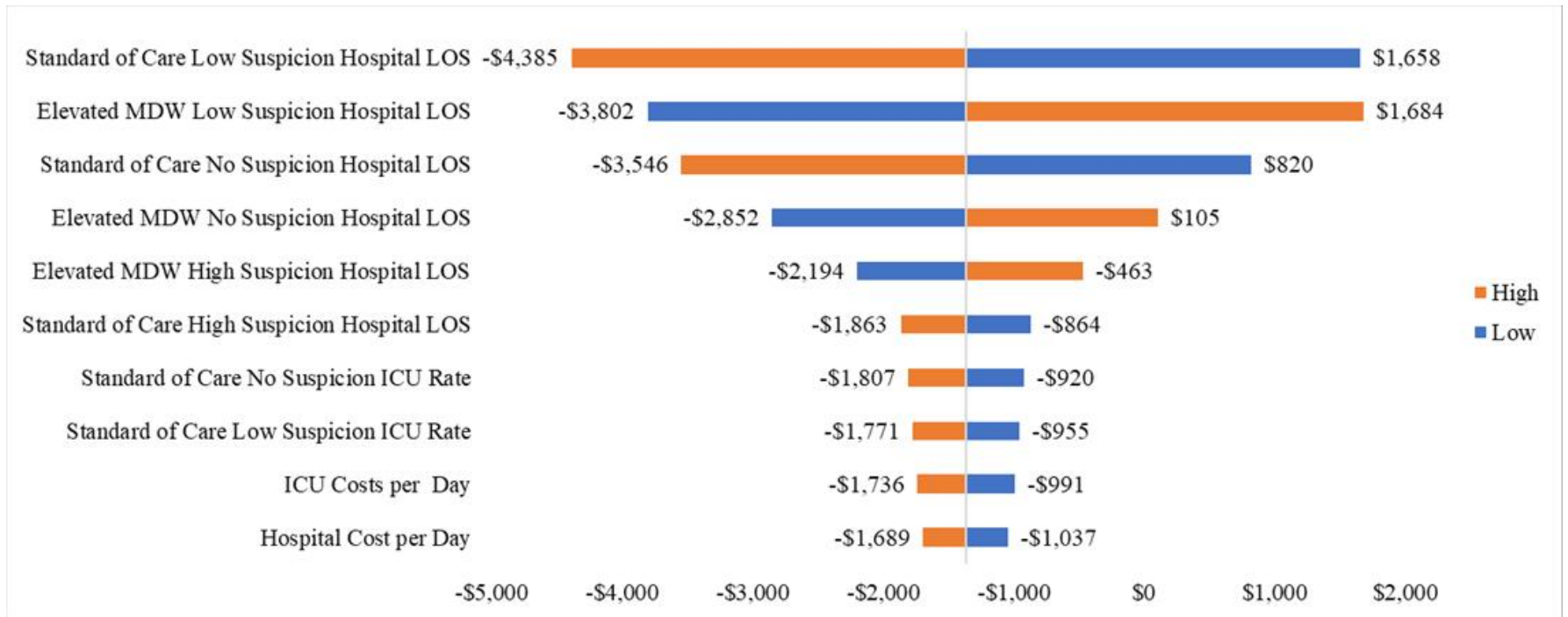
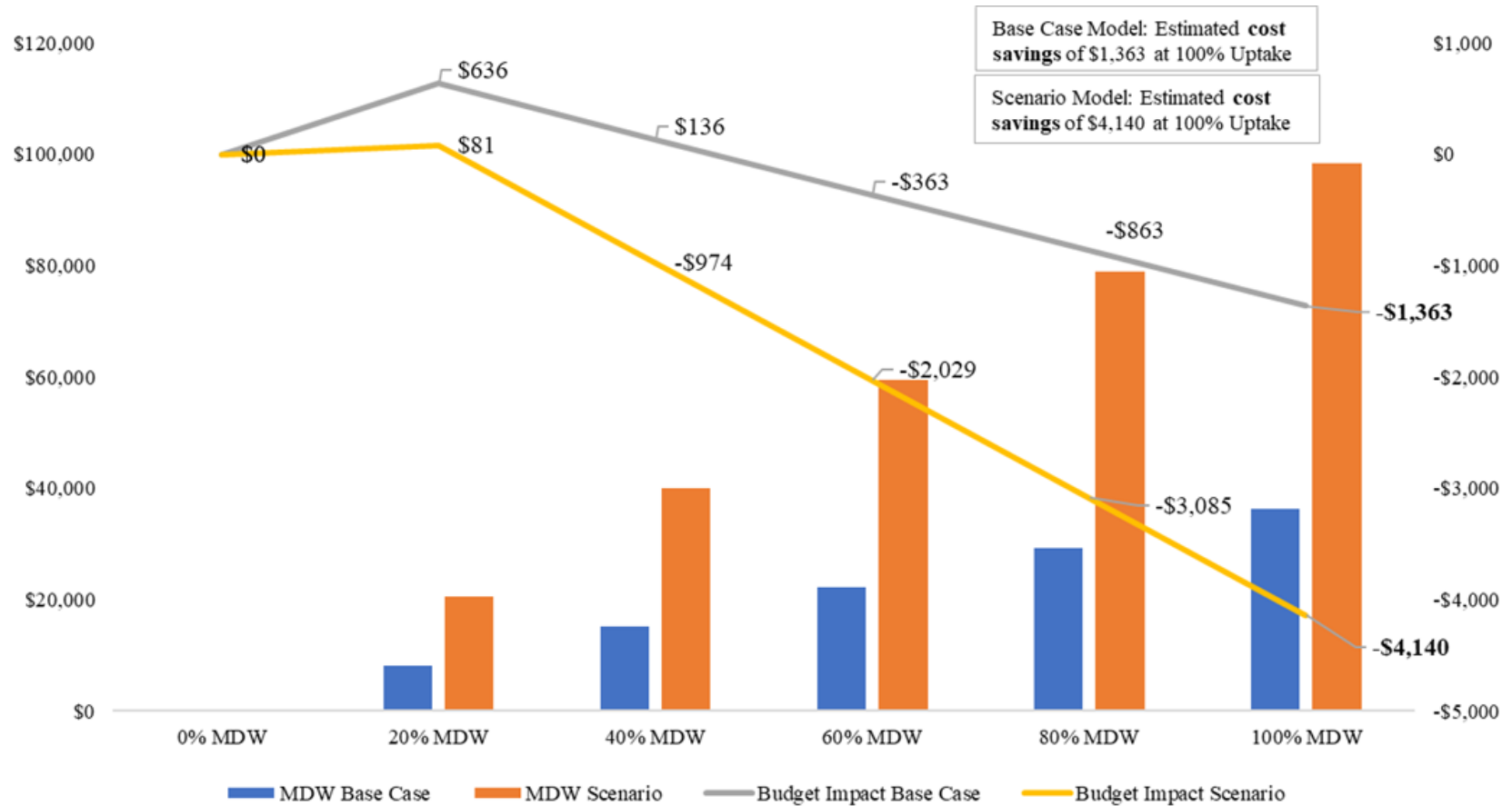


Figure S5. One-Way Sensitivity Analysis



Note: Analyses were run by varying the model base case inputs by $\pm 25\%$ to determine the sensitivity of model inputs on the results. Values shown in this graph are the differences in total costs when inputs are varied by $\pm 25\%$

Figure S6. Budget Impact of MDW Implementation Across Uptake Levels: Base Case vs Scenario Estimates



*Assumes there are 1,000 patients that enter the ED in a month, a sepsis prevalence of 0.3%

Note: *Base case* reflects clinical and economic outcomes using **adjusted TTA values** across arms. *Scenario* reflects outcomes using **unadjusted TTA values**
 MDW, Monocyte Distribution Width; SoC, Standard of Care