

Supplementary Table 1 Sensitivity analysis: H₂O₂ decontamination strategy cost

Base system cost	Shipping cost	Respirator cost	Overall cost accumulated (USD)
\$268 million	\$250 million	\$989 million	\$1.51 billion
\$415 million	\$250 million	\$989 million	\$1.65 billion
\$3.74 billion	\$250 million	\$989 million	\$4.98 billion

Supplementary Table 2 Sensitivity analysis: Disposable Gerson 1730 respirator*

Respirator strategy	Number of respirators required	Cost accumulated (USD)	Waste generated (kg)
1 per patient (all hospitalized patients)	7.41 (7.22-7.59) billion	\$6.52 (6.35-6.68) billion	126.0 (122.7-129.0) million
1 per day	3.29 (3.10-3.47) billion	\$2.89 (2.73-3.05) billion	55.85 (52.74-58.95) million
UVGI-decontaminated N95 respirators	1.64 (1.55-1.73) billion	\$1.45 (1.37-1.53) billion	27.92 (26.37-29.47) million
H ₂ O ₂ -decontaminated N95 respirators	1.15 (1.09-1.21) billion	\$1.68 (1.62-1.73) billion	19.55 (18.46-20.63) million
Reusable respirator + disposable filters	0.018 (0.017-0.019) billion	\$1.27 (1.20-1.34) billion	23.18 (21.93-24.42) million
Reusable respirator + decontaminated filters	0.018 (0.017-0.019) billion	\$0.833 (0.824-0.842) billion	1.955 (1.893-2.017) million

*The weight of one Gerson 1730 N95 Respirator is equal to 17g

Supplementary Table 3 Sensitivity Analysis: Variable Market Costs for Disposable Respirators

Cost of one 3M 1860 N95 respirator	\$0.86 (base case)		\$1.27	
Respirator strategy	Cost accumulated (USD)	Cost accumulated (USD) per patient	Cost accumulated (USD)	Cost accumulated (USD) per patient
1 per patient encounter	\$6.38 (6.21-6.52) billion	\$16.09 (15.67-16.46) thousand	\$9.42 (9.17-9.64) billion	\$23.76 (23.13-24.31) thousand
1 per day	\$2.83 (2.67-2.98) billion	\$7.13 (6.73-7.52) thousand	\$4.17 (3.94-4.40) billion	\$10.53 (9.94-11.11) thousand
UVGI-decontaminated 3M 1860 N95 respirators	\$1.41 (1.33-1.49) billion	\$3.56 (3.37-3.76) thousand	\$2.09 (1.97-2.20) billion	\$5.26 (4.97-5.56) thousand
H ₂ O ₂ -decontaminated 3M 1860 N95 respirators	\$1.65 (1.60-1.71) billion	\$4.17 (4.03-4.31) thousand	\$2.13 (2.04-2.21) billion	\$5.36 (5.16-5.57) thousand
Reusable TEAL respirator + disposable filters	\$1.24 (1.17-1.31) billion	\$3.13 (2.96-3.30) thousand	\$1.78 (1.68-1.88) billion	\$4.49 (4.24-4.74) thousand
Reusable TEAL respirator + decontaminated filters	\$0.831 (0.822-0.841) billion	\$2.10 (2.07-2.12) thousand	\$0.858 (0.848-0.869) billion	\$2.17 (2.14-2.19) thousand
Surgical mask, 1 per day	\$0.460 (0.434-0.485) billion	\$1.16 (1.10-1.23) thousand	\$0.460 (0.434-0.485) billion	\$1.16 (1.10-1.23) thousand

Supplementary Table 4 Sensitivity analysis: Reusable elastomeric respirator + disposable p100 filter

Parameter	Value
Number of respirators required	18 (17-19) million
Number of filters required (by pair)	108 (102-114) million
Results	
Reusable respirator + filter cost (USD)	\$2.14 (2.02-2.26) billion
Reusable respirator + filter waste (kg)	3.41 (3.22-3.59) million

Supplementary Table 5 Sensitivity analysis: H₂O₂ decontamination system respirator discard rate

Discard rate	Number of respirators required	Cost accumulated (USD)	Waste generated (kg)
10%	493 (465-520) million	\$1.09 (1.07-1.11) billion	5.58 (5.27-5.89) million

30%	1.15 (1.09-1.21) billion	\$1.65 (1.60-1.71) billion	13.03 (12.30-13.75) million
50%	1.81 (1.71-1.91) billion	\$2.22 (2.13 -2.31) billion	20.47 (19.33-21.61) million

Supplementary Table 6 Sensitivity analysis: Maximum cycles of decontamination per respirator for H₂O₂ decontamination system

Number cycles	Number of respirators required	Cost accumulated (USD)	Waste generated (kg)
10	1.31 (1.24-1.39) billion	\$1.80 (1.73-1.86) billion	14.89 (14.06-15.71) million
20	1.15 (1.09-1.21) billion	\$1.65 (1.60-1.71) billion	13.03 (12.30-13.75) million

Supplementary Table 7 Sensitivity analysis: UVGI decontamination strategy cost*

Parameter	Value
Cost of 2 surgical suite UVGI system	\$40,000.00
Cost of repurposed or low tech UVGI lamp system	\$50.00
Results	
Base cost	\$1.41 (1.33-1.49) billion
Base cost + cost of 2 surgical suite UVGI systems	\$1.42 (1.34-1.49) billion
Base cost + cost of repurposed or low tech UVGI lamp system	\$1.41 (1.33-1.49) billion
*Assuming distribution across hypothetical 60 sites across U.S.	

Supplementary Table 8 Sensitivity analysis: UVGI decontamination system discard rate

Discard rate	Number of respirators required	Cost accumulated (USD)	Waste generated (kg)
10%	986 (931-1040) million	\$848 (800-895) million	11.17 (10.55-11.79) million
30%	1.64 (1.55-1.73) billion	\$1.41 (1.33-1.49) billion	18.61 (17.58-19.64) million
50%	2.30 (2.17-2.43) billion	\$1.98 (1.87-2.09) billion	26.05 (24.61-27.50) million

Supplementary Table 9 Sensitivity analysis: Maximum cycles of decontamination per respirator for UVGI decontamination system

Number cycles	Number of respirators required	Cost accumulated (USD)	Waste generated (kg)
2	2.63 (2.48-2.77) billion	\$2.26 (2.13-2.39) billion	29.78 (28.12-31.43) million
5	1.64 (1.55-1.73) billion	\$1.41 (1.33-1.49) billion	18.61 (17.58-19.64) million