

# Supplementary Material

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## Supplementary Table 1

Respiratory support				
Subgroup	Median	Lower limit	Upper limit	
<b>Priors</b>				
Simple oxygen only	1.35	0.49	3.75	
Non-invasive ventilation	0.65	0.45	0.92	
Invasive mechanical ventilation	0.86	0.56	1.32	
<b>RECOVERY</b>				
Simple oxygen only	0.80	0.64	1.00	
Non-invasive ventilation	0.83	0.69	1.01	
Invasive mechanical ventilation	0.93	0.67	1.30	

95th interquartile intervals of priors and RECOVERY regarding respiratory support. This table complements Figure 1.

## Supplementary Table 2

Subgroup	95% Highest Density Interval		
	Median	Lower limit	Upper limit
<b>Use of corticosteroids</b>			
Not using	-2.81	-9.23	3.45
Using	5.76	2.80	8.63
<b>Respiratory support</b>			
Simple oxygen only	3.31	-0.20	6.66
Non-invasive ventilation	5.73	1.70	9.62
Invasive mechanical ventilation	2.49	-4.07	8.86

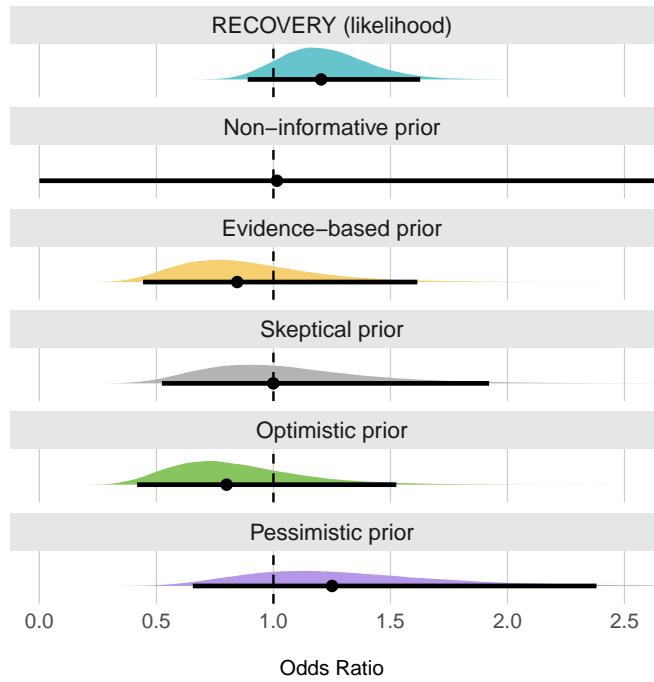
95% highest density intervals of posterior distributions. This table complements Figure 2.

## Supplementary Table 3

Subgroup	Probability of Risk Difference $\geq X\%$			
	Pr( $\geq 0\%$ )	Pr( $\geq 1\%$ )	Pr( $\geq 2\%$ )	Pr( $\geq 5\%$ )
<b>Use of corticosteroids</b>				
Not using	18.9	11.5	6.3	0.6
Using	100.0	99.9	99.3	69.4
<b>Respiratory support</b>				
Simple oxygen only	96.2	89.7	76.6	16.0
Non-invasive ventilation	99.7	98.9	96.4	64.2
Invasive mechanical ventilation	77.3	67.3	55.8	22.4

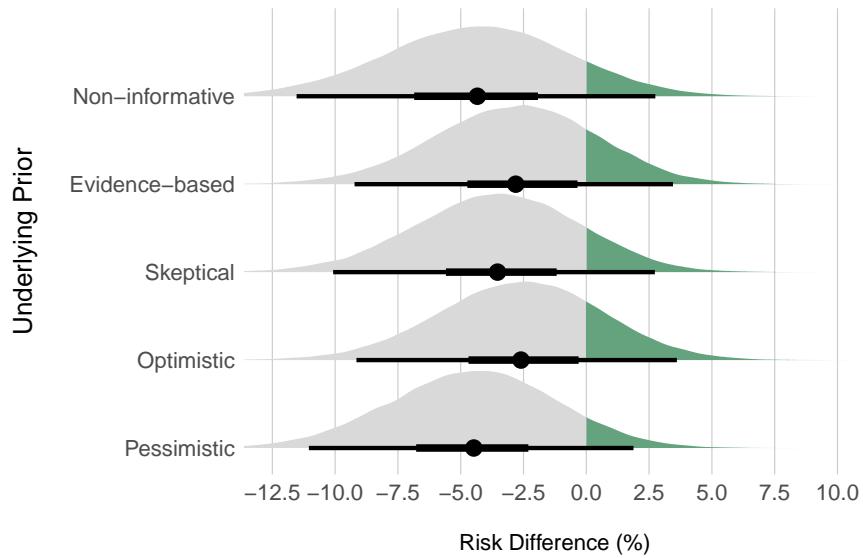
Posterior probabilities of each subgroup. This table complements Figure 2.

## Supplementary Figure 1



Prior distributions of sensitivity analyses regarding patients not using corticosteroids.

## Supplementary Figure 2



Posteriors distributions from sensitivity analyses regarding patients not using corticosteroids.

## Supplementary Table 4

Underlying Prior	Probability of Harm				Probability of Benefit			
	Pr(< -5%)	Pr(< -2%)	Pr(< -1%)	Pr(> 0%)	Pr(> 1%)	Pr(> 2%)	Pr(> 5%)	
Non-informative	43	74	82	11	7	4	0	
Evidence-based	25	60	71	19	11	6	1	
Skeptical	33	68	78	14	8	4	0	
Optimistic	23	57	69	21	13	7	1	
Pessimistic	44	78	86	8	4	2	0	

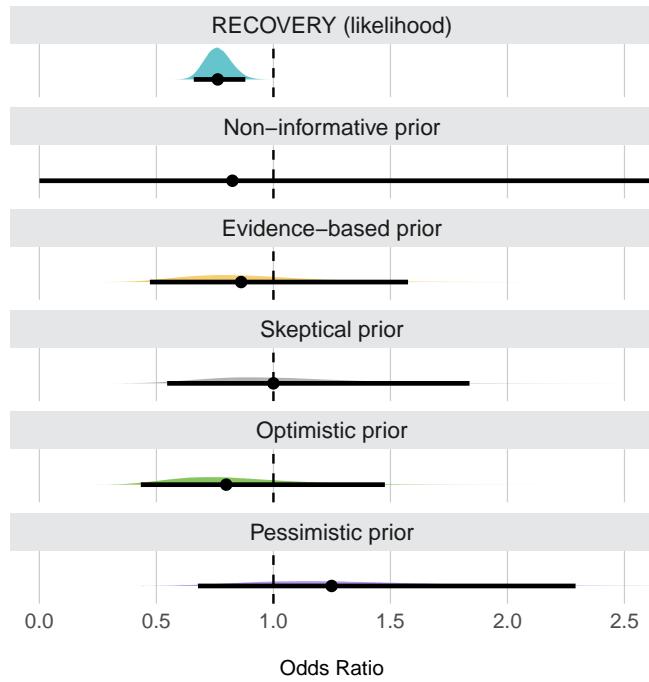
Posteriors probabilities from sensitivity analyses regarding patients not using corticosteroids. This table complements Supplementary Figures 1 and 2.

## Supplementary Table 5

Underlying Prior	Median	.lower	.upper
Non-informative	-4.34	-11.53	2.75
Evidence-based	-2.81	-9.23	3.45
Skeptical	-3.54	-10.08	2.73
Optimistic	-2.60	-9.15	3.61
Pessimistic	-4.48	-11.04	1.88

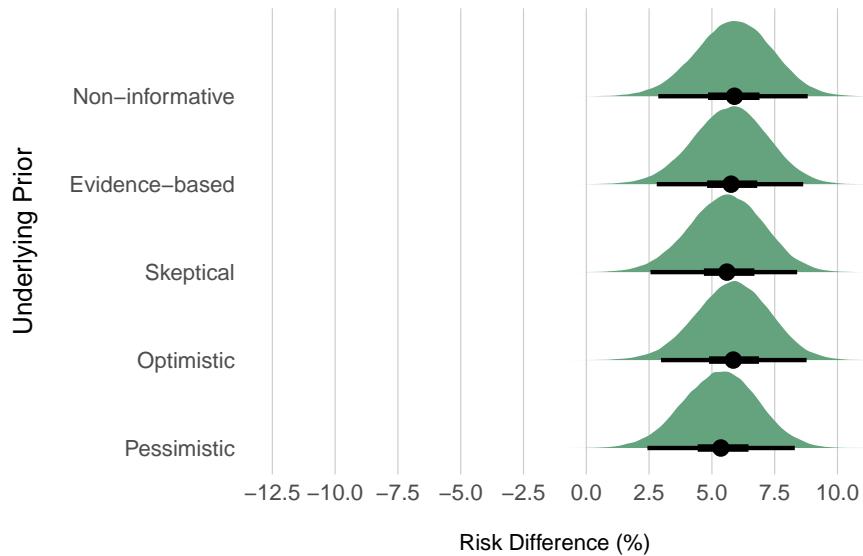
95% highest density intervals from posterior distributions regarding patients not using corticosteroids. This table complements Supplementary Figures 1 and 2.

### Supplementary Figure 3



Prior distributions of sensitivity analyses regarding patients using corticosteroids.

### Supplementary Figure 4



Posteriors distributions from sensitivity analyses regarding patients using corticosteroids.

## Supplementary Table 6

Underlying Prior	Probability of Harm			Probability of Benefit			
	Pr(< -5%)	Pr(< -2%)	Pr(< -1%)	Pr(> 0%)	Pr(> 1%)	Pr(> 2%)	Pr(> 5%)
Non-informative	0	0	0	100	100	99	72
Evidence-based	0	0	0	100	100	99	69
Skeptical	0	0	0	100	100	99	65
Optimistic	0	0	0	100	100	99	72
Pessimistic	0	0	0	100	100	99	59

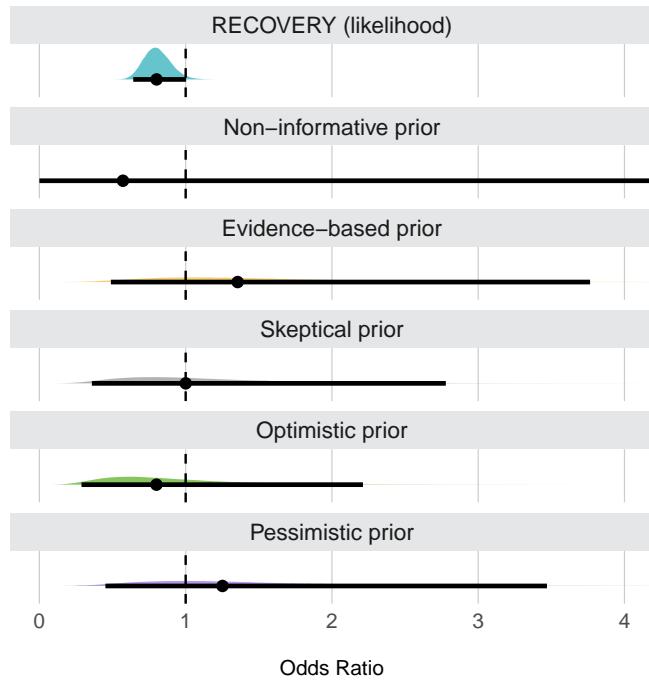
Posteriors probabilities from sensitivity analyses regarding patients using corticosteroids. This table complements Supplementary Figures 3 and 4.

## Supplementary Table 7

Underlying Prior	Median	.lower	.upper
Non-informative	5.90	2.86	8.81
Evidence-based	5.76	2.80	8.63
Skeptical	5.60	2.55	8.39
Optimistic	5.85	2.97	8.77
Pessimistic	5.36	2.43	8.30

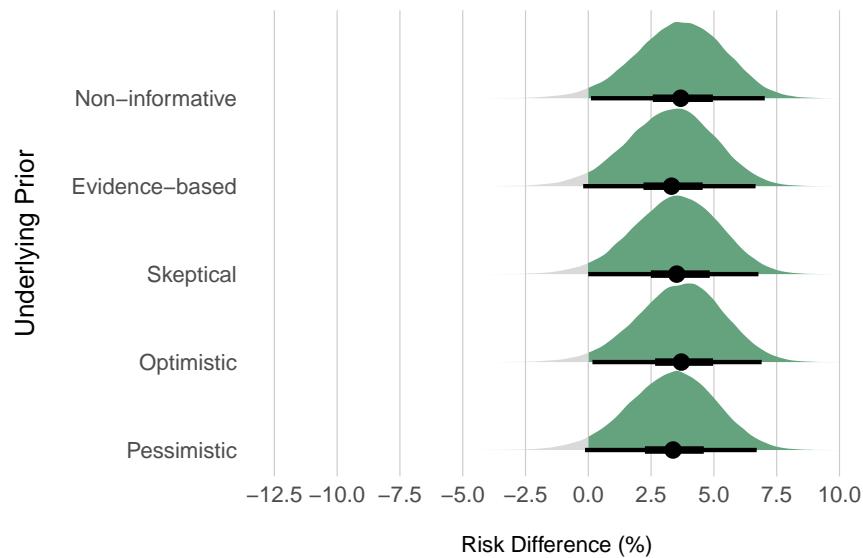
95% highest density intervals from posterior distributions regarding patients using corticosteroids. This table complements Supplementary Figures 3 and 4.

## Supplementary Figure 5



Prior distributions of sensitivity analyses regarding patients on simple oxygen only.

## Supplementary Figure 6



Posteriors distributions from sensitivity analyses regarding patients on simple oxygen only.

## Supplementary Table 8

Underlying Prior	Probability of Harm			Probability of Benefit			
	Pr(< -5%)	Pr(< -2%)	Pr(< -1%)	Pr(> 0%)	Pr(> 1%)	Pr(> 2%)	Pr(> 5%)
Non-informative	0	0	1	97	93	82	22
Evidence-based	0	0	1	96	90	77	16
Skeptical	0	0	1	97	92	80	19
Optimistic	0	0	1	98	93	83	22
Pessimistic	0	0	1	97	90	78	17

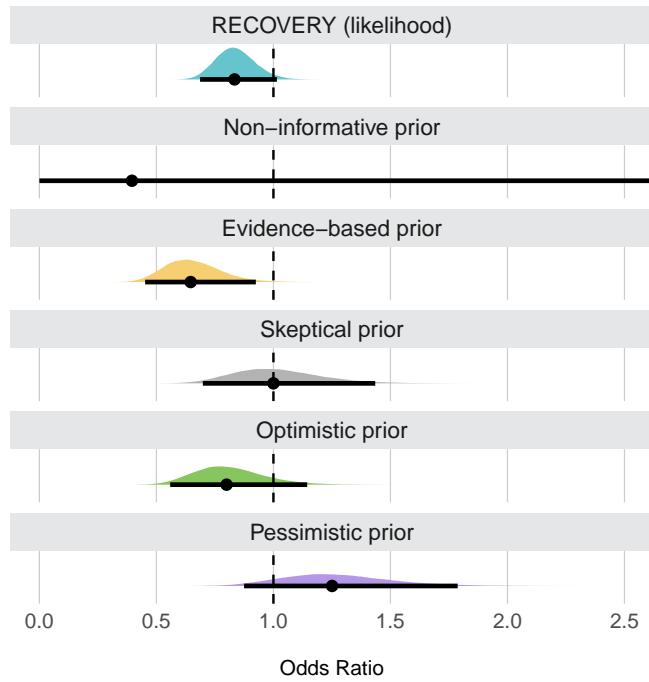
Posteriors probabilities from sensitivity analyses regarding patients on simple oxygen only. This table complements Supplementary Figures 5 and 6.

## Supplementary Table 9

Underlying Prior	Median	.lower	.upper
Non-informative	3.68	0.10	7.03
Evidence-based	3.31	-0.20	6.66
Skeptical	3.52	0.00	6.77
Optimistic	3.70	0.16	6.90
Pessimistic	3.37	-0.13	6.70

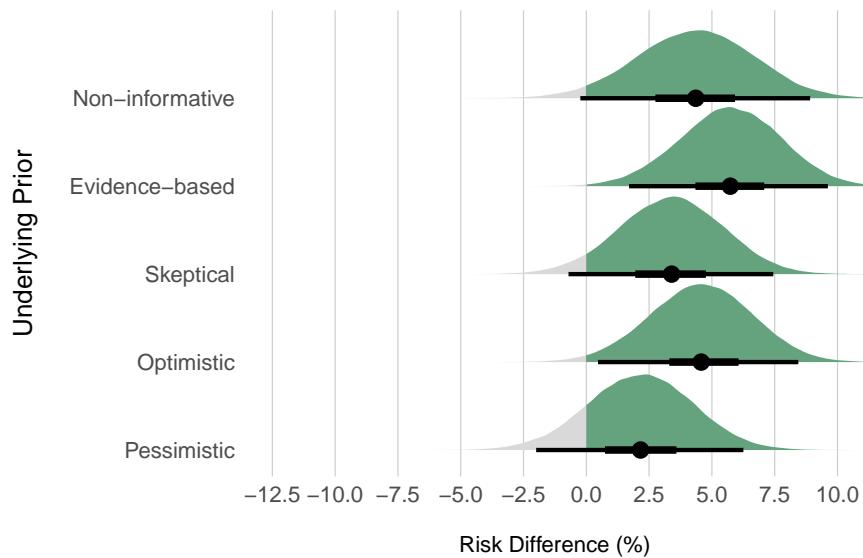
95% highest density intervals from posterior distributions regarding patients on simple oxygen only. This table complements Supplementary Figures 5 and 6.

## Supplementary Figure 7



Prior distributions of sensitivity analyses regarding patients on non-invasive ventilation.

## Supplementary Figure 8



Posteriors distributions from sensitivity analyses regarding patients on non-invasive ventilation.

## Supplementary Table 10

Underlying Prior	Probability of Harm				Probability of Benefit			
	Pr(< -5%)	Pr(< -2%)	Pr(< -1%)	Pr(> 0%)	Pr(> 1%)	Pr(> 2%)	Pr(> 5%)	
Non-informative	0	0	1	97	92	84	39	
Evidence-based	0	0	0	100	99	96	64	
Skeptical	0	1	2	95	87	75	22	
Optimistic	0	0	0	99	96	89	42	
Pessimistic	0	3	7	85	71	53	9	

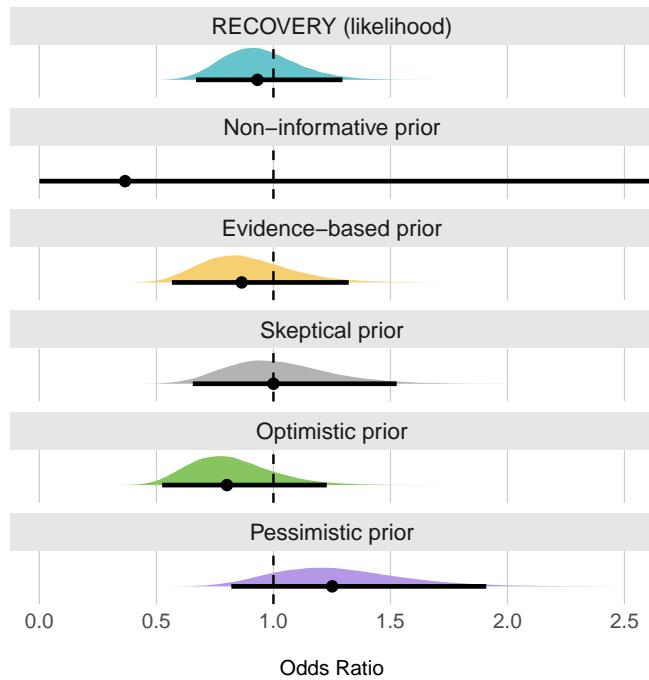
Posteriors probabilities from sensitivity analyses regarding patients on non-invasive ventilation. This table complements Supplementary Figures 7 and 8.

## Supplementary Table 11

Underlying Prior	Median	.lower	.upper
Non-informative	4.36	-0.24	8.91
Evidence-based	5.73	1.70	9.62
Skeptical	3.40	-0.71	7.45
Optimistic	4.57	0.46	8.44
Pessimistic	2.16	-2.00	6.25

95% highest density intervals from posterior distributions regarding patients on non-invasive ventilation. This table complements Supplementary Figures 7 and 8.

## Supplementary Figure 9



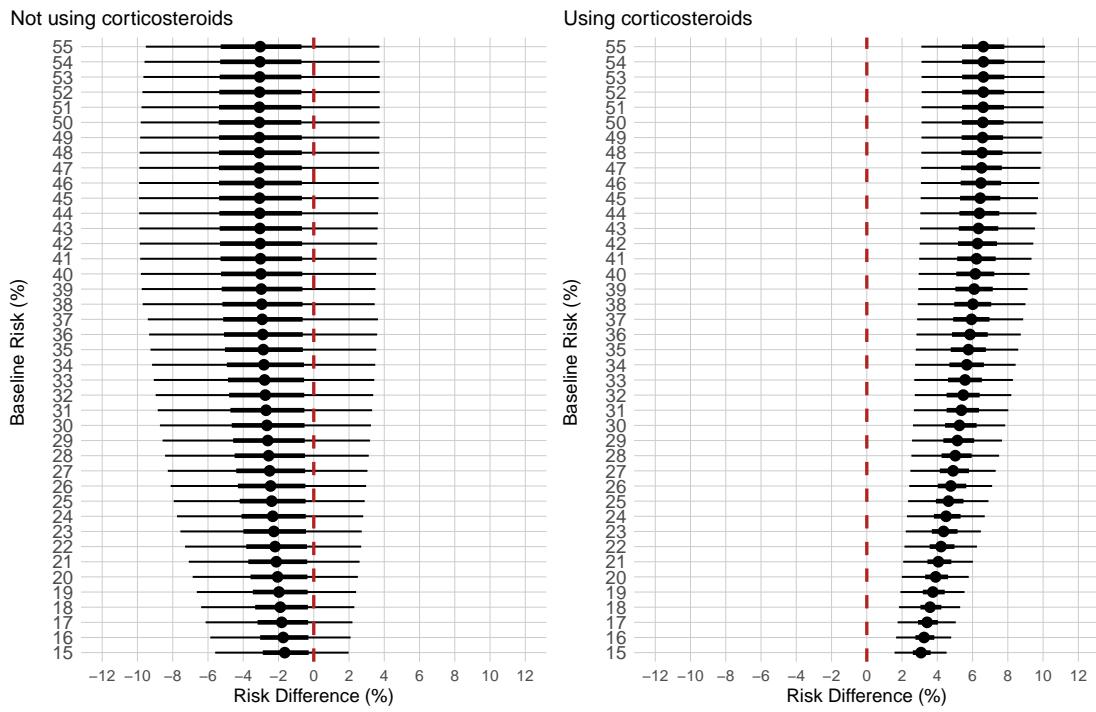
Prior distributions of sensitivity analyses regarding patients on invasive mechanical ventilation. This figure complements Figure 3.

## Supplementary Table 12

<u>Underlying Prior</u>	<u>Median</u>	<u>.lower</u>	<u>.upper</u>
Non-informative	4.36	-0.24	8.91
Evidence-based	5.73	1.70	9.62
Skeptical	3.40	-0.71	7.45
Optimistic	4.57	0.46	8.44
Pessimistic	2.16	-2.00	6.25

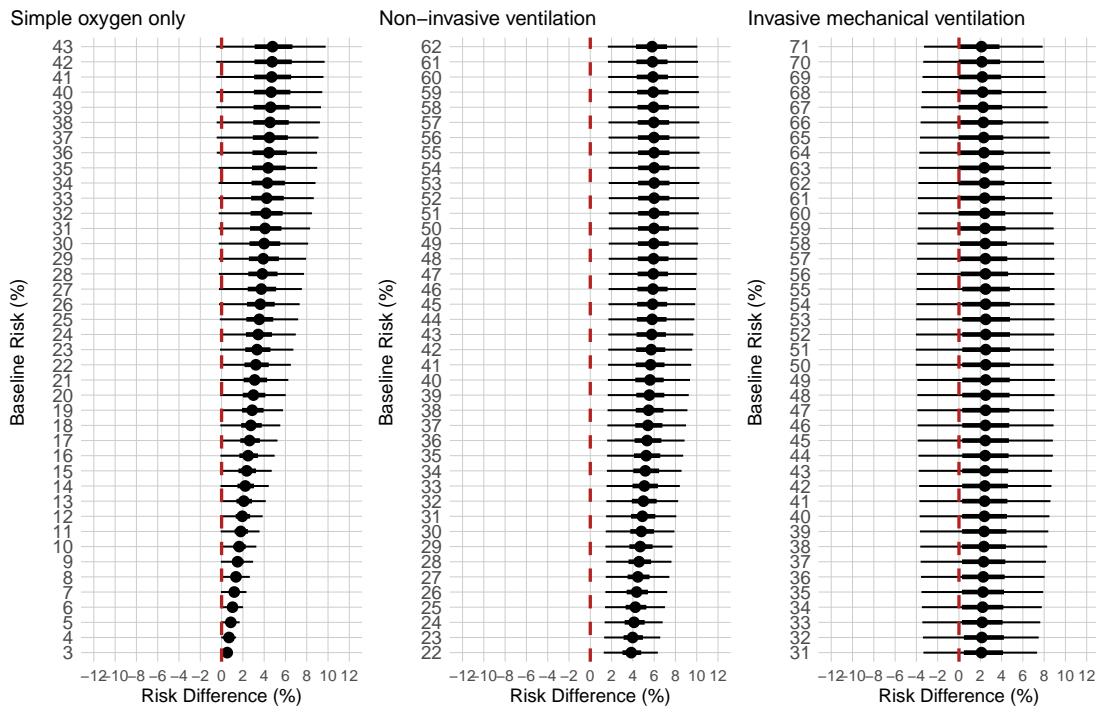
95% highest density intervals from posterior distributions regarding patients on invasive mechanical ventilation. This table complements Figure 3 and Supplementary Figure 9.

## Supplementary Figure 10



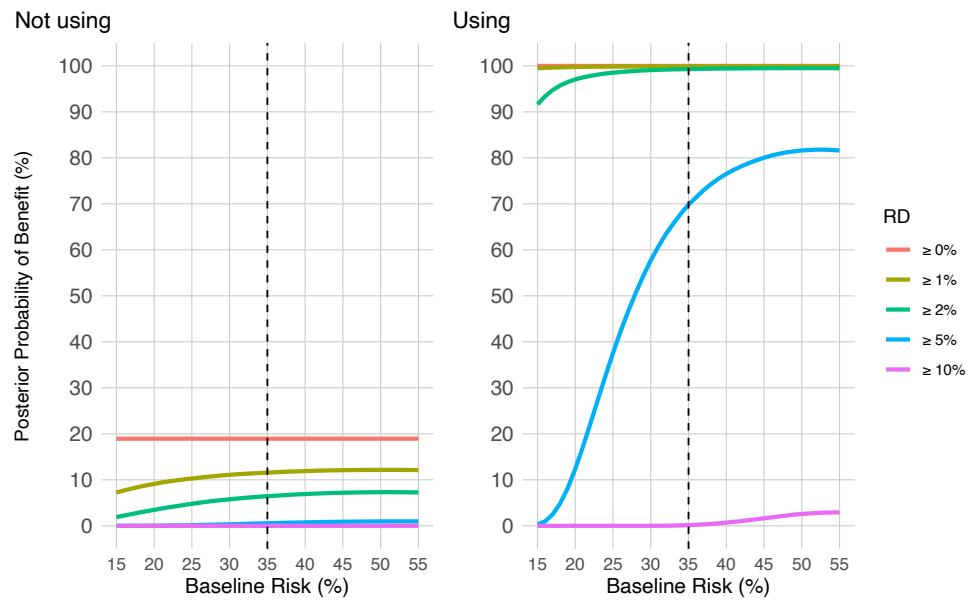
Sensitivity analyses using multiple different baseline risks for subgroups on the use of corticosteroids. Each line represents the posterior distribution for the corresponding baseline risk. Point estimates depict the median and interval bars depict 50% and 95% highest density intervals.

## Supplementary Figure 11



Sensitivity analyses using multiple different baseline risks for subgroups on respiratory support. Each line represents the posterior distribution for the corresponding baseline risk. Point estimates depict the median and interval bars depict 50% and 95% highest density intervals.

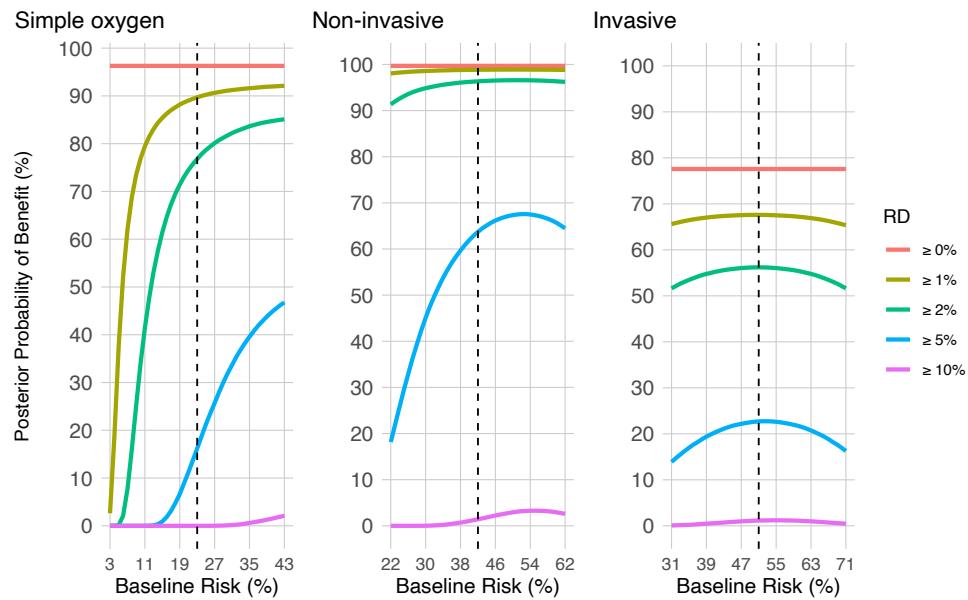
## Supplementary Figure 12



RD: Risk Difference

Sensitivity analyses using multiple different baseline risks for subgroups on the use of corticosteroids. Each line represents the posterior probability of benefit for a specific cutoff, such as risk difference greater or equal to 0%, 1%, and so on.

## Supplementary Figure 13



RD: Risk Difference

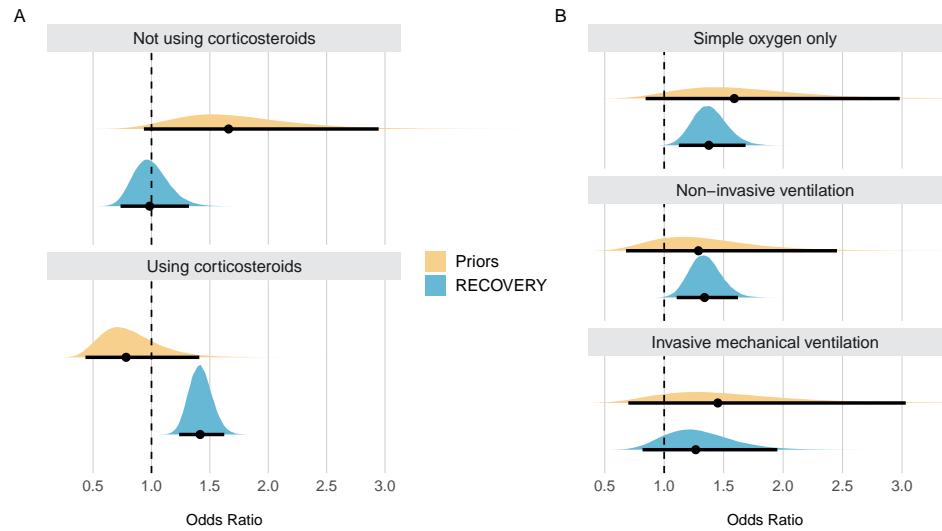
Sensitivity analyses using multiple different baseline risks for subgroups on respiratory support. Each line represents the posterior probability of benefit for a specific cutoff, such as risk difference greater or equal to 0%, 1%, and so on.

## Supplementary Table 13

Subgroup	Number of studies	Priors						RECOVERY					
		Control			Tocilizumab			Control			Tocilizumab		
		Events	Total	Risk (%)	Events	Total	Risk (%)	Events	Total	Risk (%)	Events	Total	Risk (%)
<b>Use of corticosteroids</b>													
Not using	1	35	65	<b>53.8</b>	124	188	<b>66.0</b>	168	367	<b>45.8</b>	162	357	<b>45.4</b>
Using	1	36	79	<b>45.6</b>	42	106	<b>39.6</b>	873	1721	<b>50.7</b>	987	1664	<b>59.3</b>
<b>Respiratory support</b>													
Simple oxygen only	2	84	111	<b>75.7</b>	118	141	<b>83.7</b>	635	933	<b>68.1</b>	697	935	<b>74.5</b>
Non-invasive ventilation	2	77	102	<b>75.5</b>	110	154	<b>71.4</b>	362	867	<b>41.8</b>	401	819	<b>49.0</b>
Invasive mechanical ventilation	1	13	55	<b>23.6</b>	35	113	<b>31.0</b>	47	294	<b>16.0</b>	52	268	<b>19.4</b>

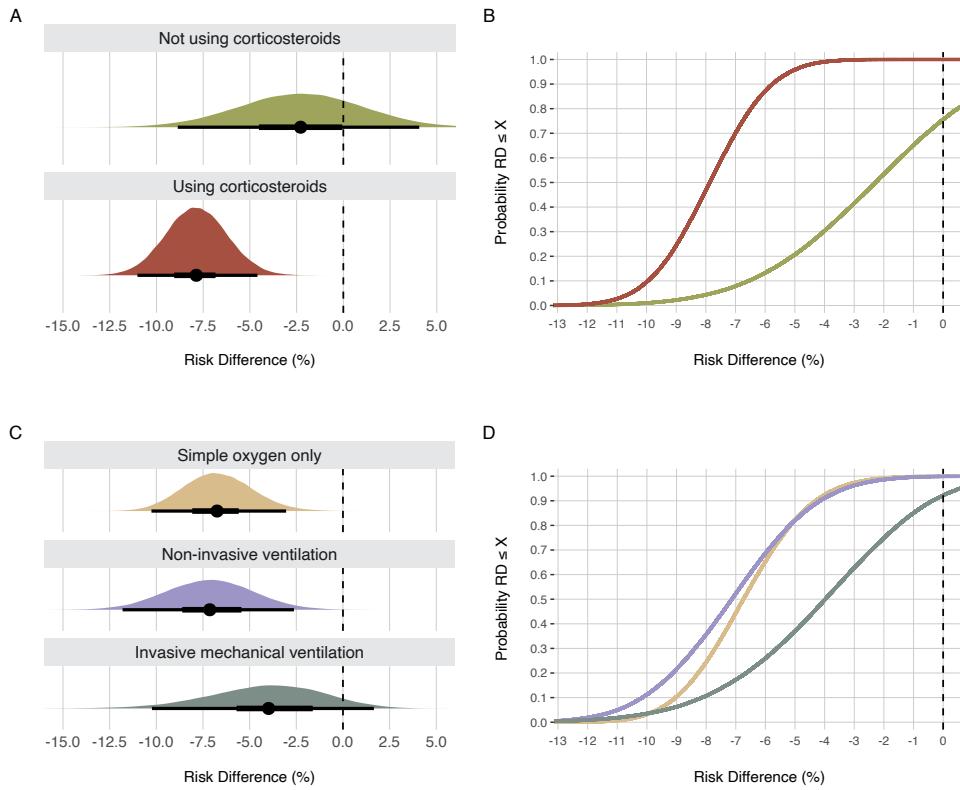
Number of events and sample size regarding the hospital discharge outcome.

## Supplementary Figure 14



RECOVERY and Priors distributions regarding the hospital discharge outcome. Point estimates depict the median and interval bars depict 95th quantiles.

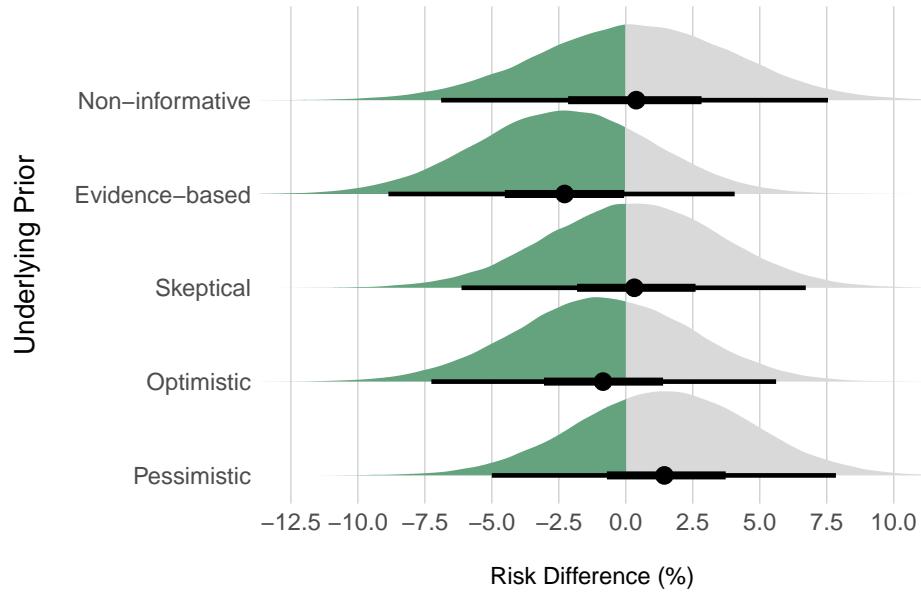
## Supplementary Figure 15



Posterior distributions regarding the hospital discharge outcome.

Panels A and C: Point estimates depict the median. Interval bars depict the 50 and 95% highest density intervals. Panels B and D: Cumulative posterior distributions correspond to the probabilities that the risk difference (RD) is greater than or equal to the effect size on the X-axis.

## Supplementary Figure 16



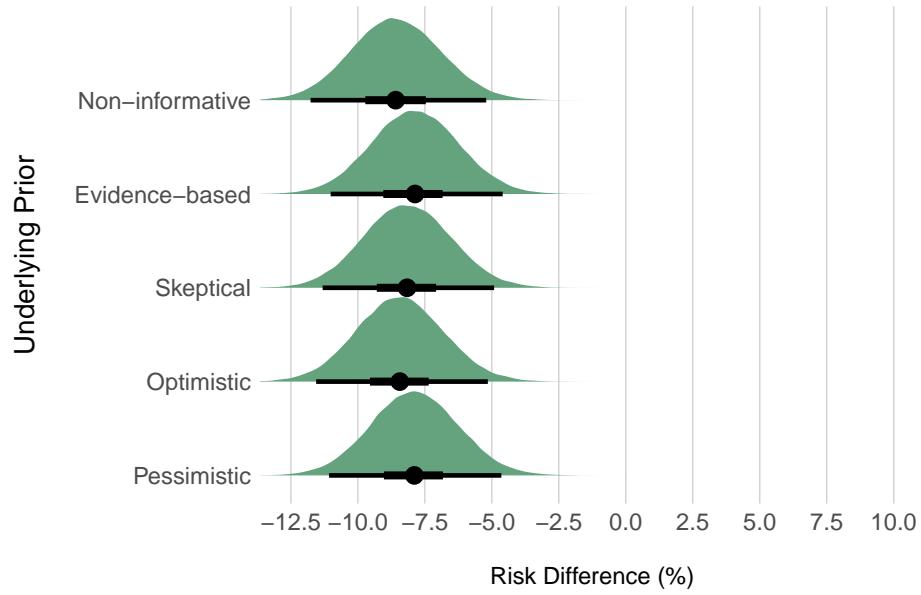
Posteriors distributions from sensitivity analyses using different priors. This figure regards patients not using corticosteroids for the hospital discharge outcome.

## Supplementary Table 14

Underlying Prior	Probability of Benefit				Probability of Harm		
	Pr(< -5%)	Pr(< -2%)	Pr(< -1%)	Pr(< 0%)	Pr(> 1%)	Pr(> 2%)	Pr(> 5%)
Non-informative	7	26	35	46	43	33	10
Evidence-based	21	54	65	76	16	10	1
Skeptical	5	24	35	46	42	30	8
Optimistic	11	36	48	60	29	20	4
Pessimistic	3	15	23	33	55	43	14

Posteriors probabilities from sensitivity analyses using different priors. This table complements Supplementary Figure 16.

## Supplementary Figure 17



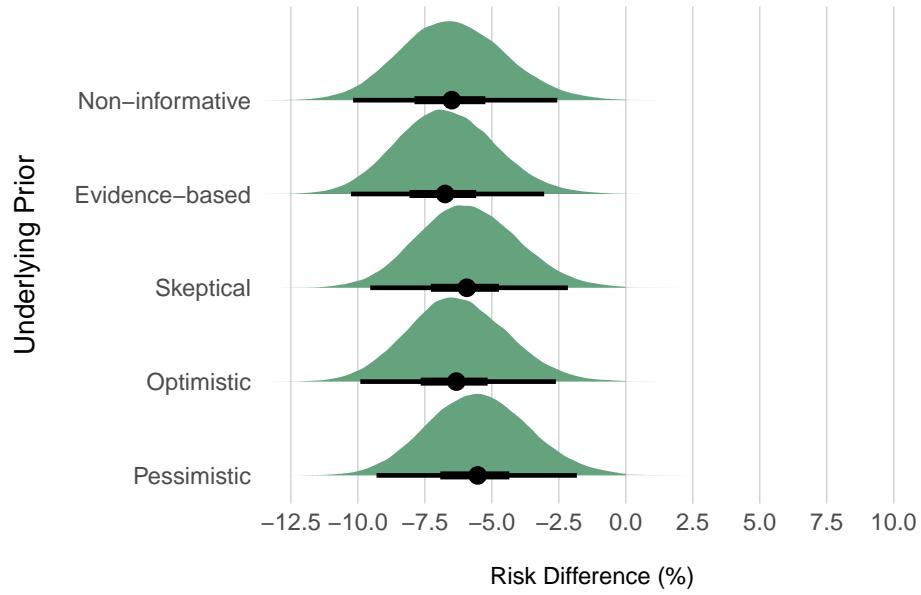
Posteriors distributions from sensitivity analyses using different priors. This figure regards patients using corticosteroids for the hospital discharge outcome.

## Supplementary Table 15

Underlying Prior	Probability of Benefit				Probability of Harm		
	Pr(< -5%)	Pr(< -2%)	Pr(< -1%)	Pr(< 0%)	Pr(> 1%)	Pr(> 2%)	Pr(> 5%)
Non-informative	98	100	100	100	0	0	0
Evidence-based	96	100	100	100	0	0	0
Skeptical	97	100	100	100	0	0	0
Optimistic	98	100	100	100	0	0	0
Pessimistic	96	100	100	100	0	0	0

Posteriors probabilities from sensitivity analyses using different priors. This table complements Supplementary Figure 17.

## Supplementary Figure 18



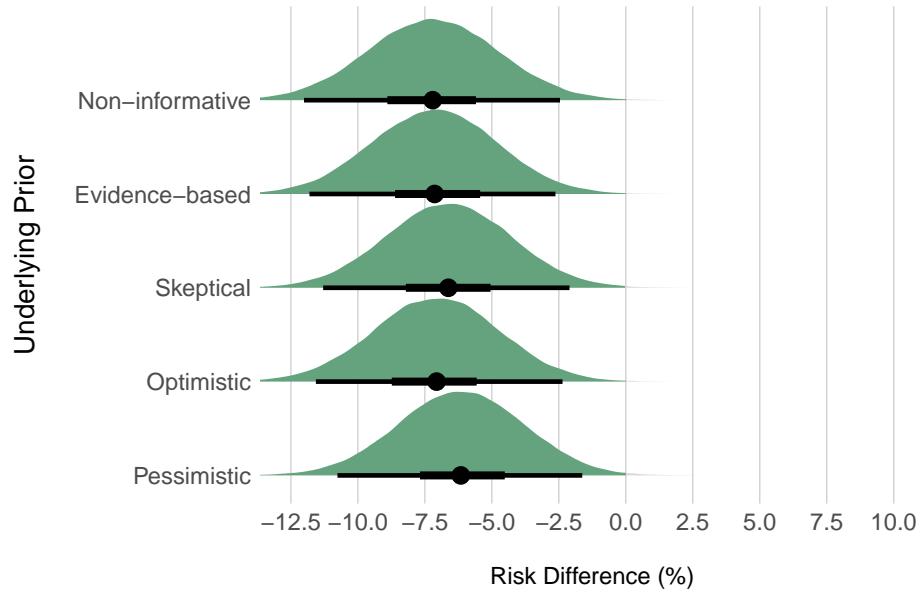
Posteriors distributions from sensitivity analyses using different priors. This figure regards patients on simple oxygen only for the hospital discharge outcome.

## Supplementary Table 16

Underlying Prior	Probability of Benefit				Probability of Harm		
	Pr(< -5%)	Pr(< -2%)	Pr(< -1%)	Pr(< 0%)	Pr(> 1%)	Pr(> 2%)	Pr(> 5%)
Non-informative	77	99	100	100	0	0	0
Evidence-based	82	99	100	100	0	0	0
Skeptical	69	98	99	100	0	0	0
Optimistic	76	99	100	100	0	0	0
Pessimistic	61	96	99	100	0	0	0

Posteriors probabilities from sensitivity analyses using different priors. This table complements Supplementary Figure 18.

## Supplementary Figure 19



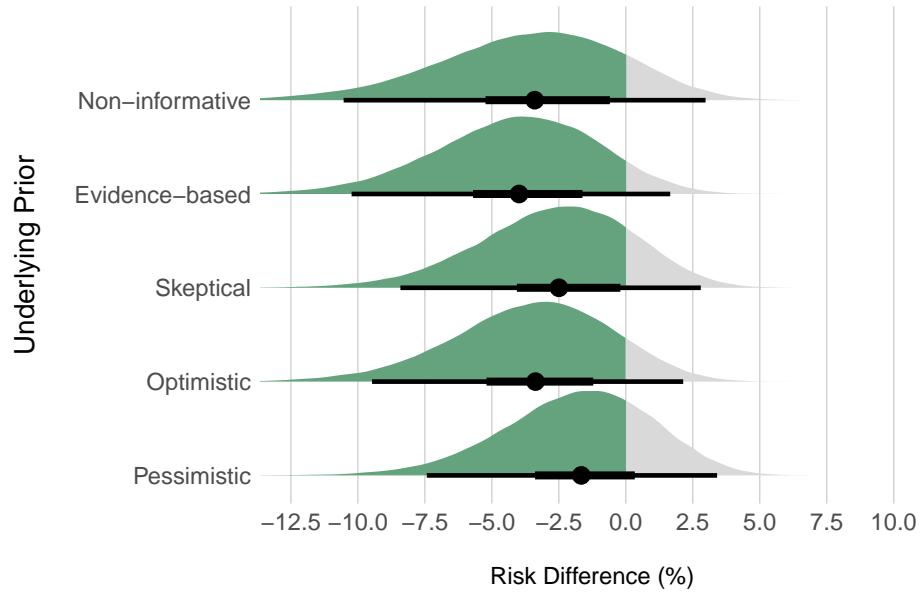
Posteriors distributions from sensitivity analyses using different priors. This figure regards patients on non-invasive ventilation for the hospital discharge outcome.

## Supplementary Table 17

Underlying Prior	Probability of Benefit				Probability of Harm		
	Pr(< -5%)	Pr(< -2%)	Pr(< -1%)	Pr(< 0%)	Pr(> 1%)	Pr(> 2%)	Pr(> 5%)
Non-informative	82	98	99	100	0	0	0
Evidence-based	82	99	100	100	0	0	0
Skeptical	76	98	99	100	0	0	0
Optimistic	81	99	100	100	0	0	0
Pessimistic	69	96	99	100	0	0	0

Posteriors probabilities from sensitivity analyses using different priors. This table complements Supplementary Figure 19.

## Supplementary Figure 20



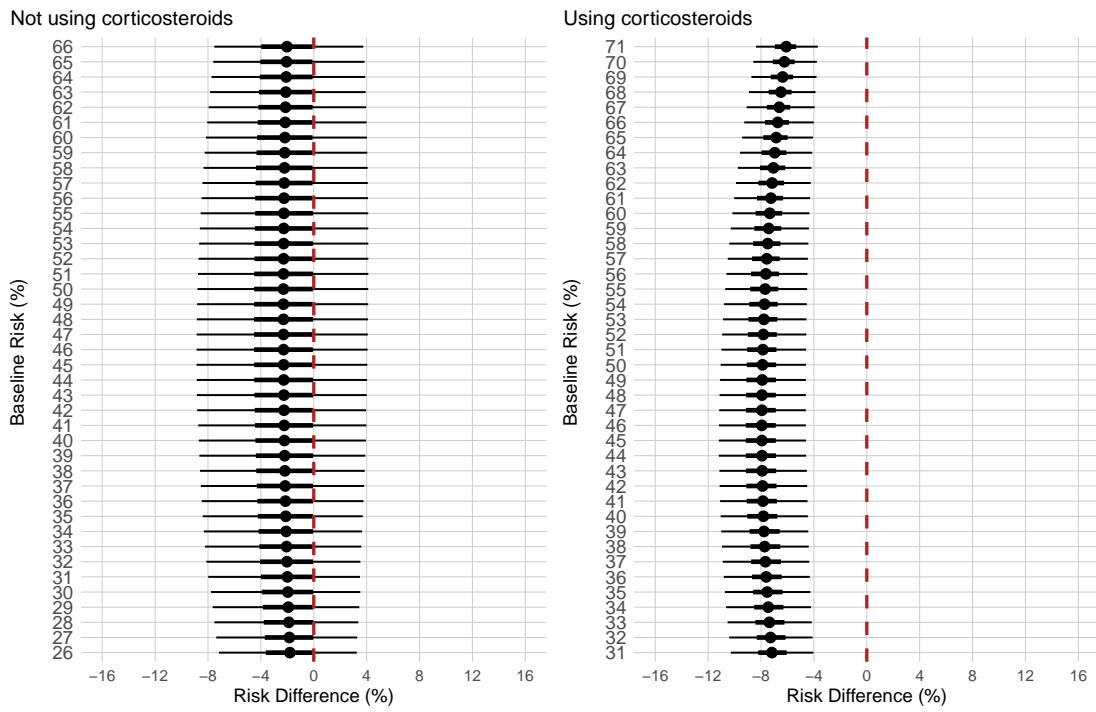
Posteriors distributions from sensitivity analyses using different priors. This figure regards patients on invasive mechanical ventilation for the hospital discharge outcome.

## Supplementary Table 18

Underlying Prior	Probability of Benefit				Probability of Harm			
	Pr(< -5%)	Pr(< -2%)	Pr(< -1%)	Pr(< 0%)	Pr(> 1%)	Pr(> 2%)	Pr(> 5%)	
Non-informative	33	66	77	85	8	4	0	
Evidence-based	37	75	85	92	4	1	0	
Skeptical	20	57	70	82	9	4	0	
Optimistic	30	68	80	89	5	2	0	
Pessimistic	13	45	59	73	15	8	0	

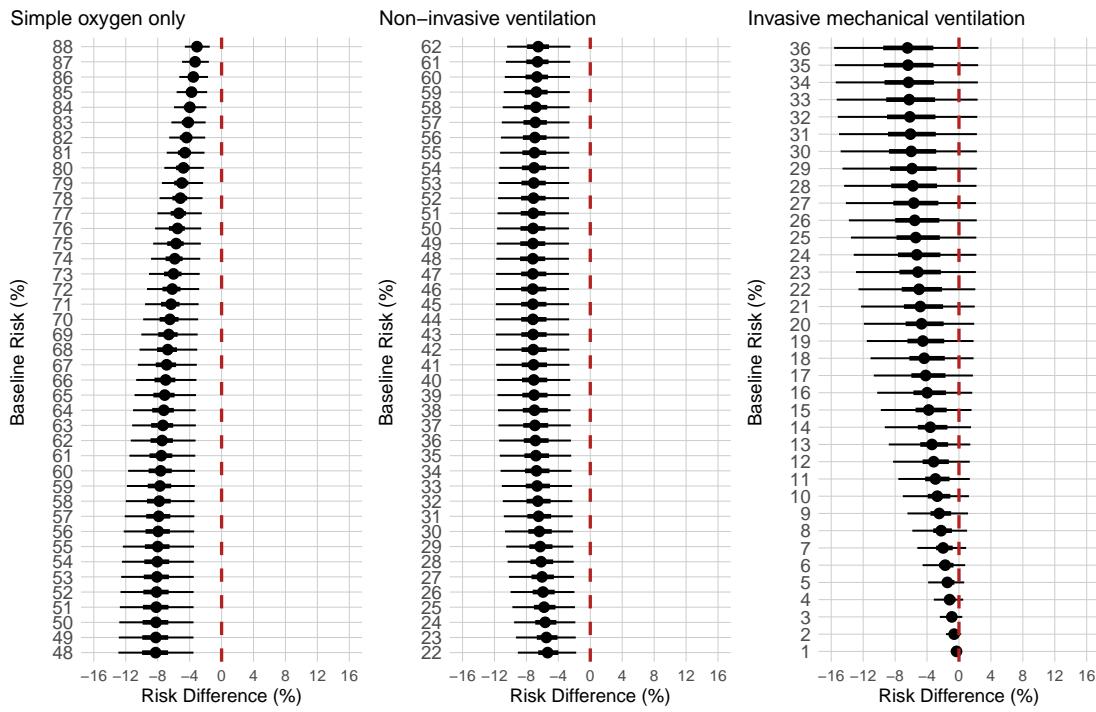
Posteriors probabilities from sensitivity analyses using different priors. This table complements Supplementary Figure 20.

## Supplementary Figure 21



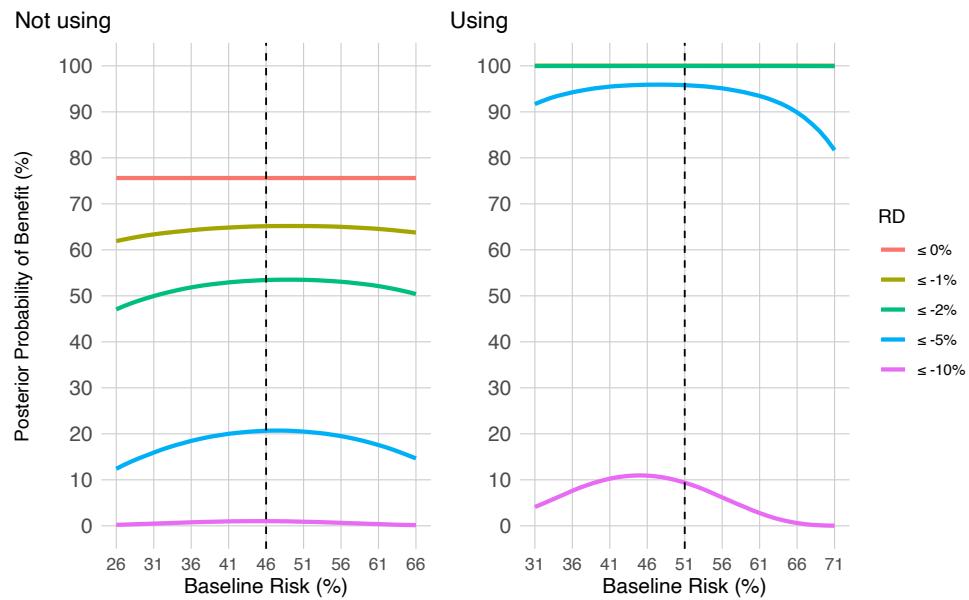
Sensitivity analyses using multiple different baseline risks for subgroups on the use of corticosteroids for the hospital discharge outcome. Each line represents the posterior distribution for the corresponding baseline risk. Point estimates depict the median and interval bars depict 50% and 95% highest density intervals.

## Supplementary Figure 22



Sensitivity analyses using multiple different baseline risks for subgroups on respiratory support for the hospital discharge outcome. Each line represents the posterior distribution for the corresponding baseline risk. Point estimates depict the median and interval bars depict 50% and 95% highest density intervals.

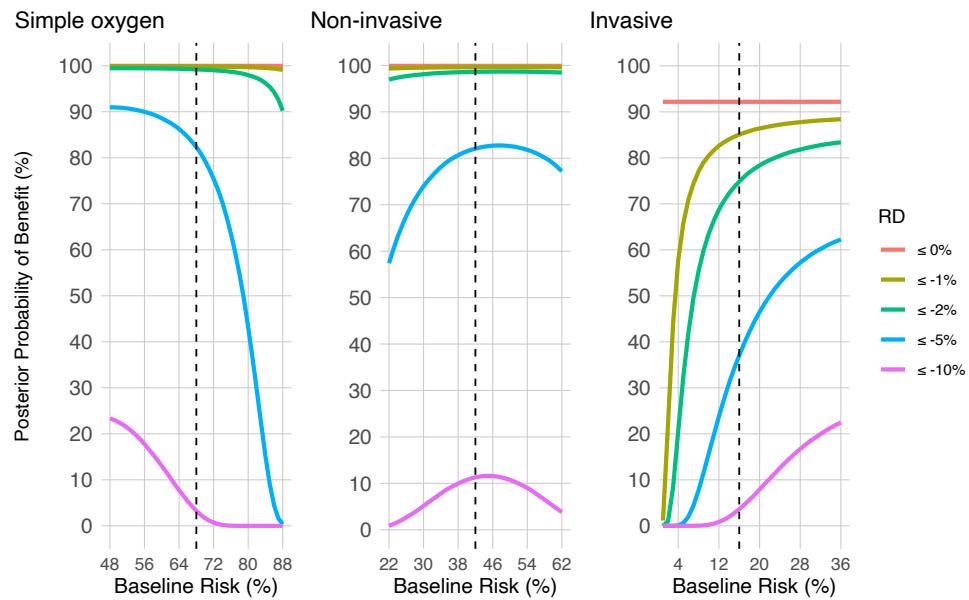
## Supplementary Figure 23



RD: Risk Difference

Sensitivity analyses using multiple different baseline risks for subgroups on the use of corticosteroids for the hospital discharge outcome. Each line represents the posterior probability of benefit for a specific cutoff, such as risk difference greater or equal to 0%, 1%, and so on.

## Supplementary Figure 24



RD: Risk Difference

Sensitivity analyses using multiple different baseline risks for subgroups on respiratory support for the hospital discharge outcome. Each line represents the posterior probability of benefit for a specific cutoff, such as risk difference greater or equal to 0%, 1%, and so on.