Valuing COVID-19 Morbidity Risk Reductions
Supplement: Detailed Results from Literature Review
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This supplement provides the detailed results of our review of the health-related quality of life (HRQoL) estimates from the quality-adjusted life year (QALY) literature. The process used to identify these studies and the criteria used to evaluate them are described in the main text, as are HRQoL estimates we select for application. We first list the studies that address COVID-19, then the studies that address influenza, chronic obstructive pulmonary disease (COPD), acute sepsis, respiratory failure, and prolonged mechanical ventilation, and post-acute sepsis, respiratory failure, and prolonged mechanical ventilation.

Table S1. HRQoL Studies, COVID-19

Study	Location	HRQoL Scale	Population	Average Age	Health State	HRQoL Score
Garrigues et al. 2020	France, one hospital	EQ-5D, French weights	96 patients	64.1	COVID-19, hospitalized in ward, post-discharge, mean of 110.9 days after hospital admission[a]	0.86
Garrigues et al. 2020	France, one hospital	EQ-5D, French weights	24 patients	59.6	COVID-19, hospitalized in ICU, post-discharge, mean of 110.9 days after hospital admission[a]	0.82
Meys et al. 2020	Belgium, members of online support group	EQ-5D, German weights	622 patients	45	COVID-19, non-hospitalized, mean of 79 days after symptom onset	0.62
Garratt et al. 2021	Norway, population-based cohort	EQ-5D, U.K. weights	458 patients	49.5	COVID-19, non-hospitalized, mean of 4 months after symptom onset	0.82
Halpin et al. 2021	U.K., one hospital	EQ-5D, U.K. weights[b]	68 patients	70.5[c]	COVID-19, hospitalized in ward, mean of 48 days after hospital discharge[d]	0.724
Halpin et al. 2021	U.K., one hospital	EQ-5D, U.K. weights[b]	32 patients	58.5[c]	COVID-19, hospitalized in ICU, mean of 48 days after hospital discharge[d]	0.693
					Range of estimates, primary selection criteria	**0.62 to 0.86**
Supplementary estimates based on small samples and/or expert assessments						
Taboada et al. 2020	Spain, one hospital	EQ-5D, weights not specified	91 patients	65.5	COVID-19, critically ill, ARDS, admitted to ICU, 6 months after ICU discharge	0.7054
					Range of estimates, primary and supplemental studies	**0.62 to 0.86**

a. Mean time from hospital admission corresponds to the overall sample of 120 patients.
b. The authors do not explicitly report the country weights used but describe a U.K. population.
c. Age estimates correspond to sample medians.
d. Mean time after hospital discharge corresponds to the overall sample of 100 patients. Halpin et al. (2021) report that the median length of stay was 6.5 days for ward patients and 12 days for ICU patients.

Table S2. HRQoL Studies, Influenza

Study	Location	HRQoL Scale	Population	Average Age	Health State	HRQoL Score
Van Hoek et al. 2011	U.K. (England)	EQ-5D, U.K. weights	46 patients	Not provided	Influenza-like illness, worst day of illness	0.34
Van Hoek et al. 2011	U.K. (England)	EQ-5D, U.K. weights	114 patients	Not provided	Laboratory-confirmed H1N1 influenza, worst day of illness	0.29
Hollmann et al. 2013	Spain, 36 hospitals	EQ-5D, Spanish weights	563 patients	39.15	Laboratory-confirmed H1N1 influenza, outpatient care	0.50
Hollmann et al. 2013	Spain, 36 hospitals	EQ-5D, Spanish weights	432 patients	43.44	Laboratory-confirmed H1N1 influenza, inpatient care	0.23
Bilcke et al. 2014	Belgium, national sample	SF-6D, U.K. weights	1,107 patients	Not provided	Influenza-like illness, not seeking ambulatory or hospital care	0.70
Bilcke et al. 2014	Belgium, national sample	SF-6D, U.K. weights	1,116 patients	Not provided	Influenza-like illness, seeking ambulatory care	0.68
Bilcke et al. 2014	Belgium, national sample	SF-6D, U.K. weights	429 patients	Not provided	Physician-diagnosed influenza, seeking ambulatory care	0.68
Bilcke et al. 2014	Belgium, national sample	SF-6D, U.K. weights	24 patients	Not provided	Influenza-like illness, hospitalized	0.61
Bilcke et al. 2014	Belgium, national sample	SF-6D, U.K. weights	6 patients	Not provided	Physician-diagnosed influenza, hospitalized	0.62
					Range of estimates, primary selection criteria	**0.23 to 0.70**
Supplementary estimates based on small samples and/or expert assessments						
Griffin et al. 2001	U.K.	EQ-5D, U.K. weights	21 patients	Not provided	Laboratory-confirmed influenza infection	-0.066[c]
Griffin et al. 2001	U.K.	EQ-5D, U.K. weights	Expert assessment	N/A	Influenza among hypothetical high-risk patient	-0.263[c]
Brady et al. 2001	Canada	HUI Mark 3, weights not reported[a]	11 adults[b]	Not provided	Influenza	0.636
Mauskopf et al. 2000	N/A	QWB, weights not reported[a]	Expert assessment	N/A	Influenza	0.5579
Muennig and Khan 2001	N/A	QWB, weights not reported[a]	Expert assessment	N/A	Influenza-like illness	0.61
					Range of estimates, primary and supplemental studies	**-0.263 to 0.70**

a. Given the weights available, the HUI most likely reflects Canadian weights and the QWB most likely reflects U.S. weights.
b. Authors do not indicate whether adults were former patients.
c. Authors do not discuss the reasons for these very low HRQoL scores.

Table S3. HRQoL Studies, COPD

Study	Location	HRQoL Scale	Population	Average Age	Health State	HRQoL Score
Solem et al. 2013	U.S., national	EQ-5D, U.S. weights	190 patients	67.4	COPD, severe	0.707
Solem et al. 2013	U.S., national	EQ-5D, U.S. weights	124 patients	68.8	COPD, very severe	0.623
Solem et al. 2013	U.S., national	EQ-5D, U.S. weights	190 patients	67.4	COPD, severe, most recent exacerbation	0.590
Solem et al. 2013	U.S., national	EQ-5D, U.S. weights	124 patients	68.8	COPD, very severe, most recent exacerbation	0.494
Lin et al. 2014	U.S., clinical centers	EQ-5D, U.S. weights[a]	102 patients	72.1	COPD, GOLD stage I[b]	0.81
Lin et al. 2014	U.S., clinical centers	EQ-5D, U.S. weights[a]	353 patients	68.3	COPD, GOLD stage II	0.81
Lin et al. 2014	U.S., clinical centers	EQ-5D, U.S. weights[a]	165 patients	67.7	COPD, GOLD stage III	0.76
Lin et al. 2014	U.S., clinical centers	EQ-5D, U.S. weights[a]	50 patients	65.1	COPD, GOLD stage IV	0.74
Rutten-van Mölken et al. 2006	14 countries[c]	EQ-5D, U.S. weights	622 patients	64.0	COPD, GOLD stage II	0.832
Rutten-van Mölken et al. 2006	14 countries[c]	EQ-5D, U.S. weights	513 patients	65.6	COPD, GOLD stage III	0.803
Rutten-van Mölken et al. 2006	14 countries[c]	EQ-5D, U.S. weights	91 patients	61.6	COPD, GOLD stage IV	0.731
Pickard et al. 2011	U.S., one Veterans Affairs hospital	EQ-5D, U.S. weights	23 patients	72.3	COPD, GOLD stage I	0.80
Pickard et al. 2011	U.S., one Veterans Affairs hospital	EQ-5D, U.S. weights	53 patients	71.7	COPD, GOLD stage II	0.70
Pickard et al. 2011	U.S., one Veterans Affairs hospital	EQ-5D, U.S. weights	27 patients	70.4	COPD, GOLD stage III	0.72
Pickard et al. 2011	U.S., one Veterans Affairs hospital	EQ-5D, U.S. weights	17 patients	73.3	COPD, GOLD stage IV	0.72
					Range of estimates, primary selection criteria[d]	**0.494 to 0.832**

a. The authors do not explicitly report the country weights used but refer to HRQoL scores for the U.S. population.
b. "GOLD" refers to the Global Initiative for Chronic Obstructive Lung Disease grading system. More information is available at https://goldcopd.org/.
c. Countries include U.S., Czech Republic, Spain, Denmark, Germany, Poland, the Netherlands, Italy, France, Hungary, Russia, Belgium, and Australia. Of the total sample, 34.5% were U.S. patients. While the U.S. results are not reported separately, the authors estimate that U.S. patients had HRQoL scores that were between 0.04 and 0.15 higher than the scores of Italian, Czech, Polish, and French patients but 0.06 lower than Danish patients.
d. Due to the large number of studies that meet our primary selection criteria, we do not report the results of supplemental COPD studies.

Table S4. HRQoL Studies, Acute Sepsis and Mechanical Ventilation

Study	Location	HRQoL Scale	Population[a]	Average Age	Health State	HRQoL Score
Galante et al. 2011	Argentina, convenience sample	EQ-5D, U.K. weights	73 members of the general public	31	Sepsis from pneumococcal disease	-0.295
Hung et al. 2010	Taiwan, five medical institutions	EQ-5D, Taiwanese weights	55 patients	70.9	Conditions requiring prolonged mechanical ventilation	0.23
					Range of estimates, supplemental studies[a]	**-0.295 to 0.23**

a. No studies were identified that meet our primary selection criteria.

Table S5. HRQoL Studies, Post-Acute Sepsis, ARDS, and Acute Respiratory Failure

Study	Health State	HRQoL Scale	Population[a]	Average Age	Health State	HRQoL Score
Higgins et al. 2019	Australia, New Zealand, Finland, Hong Kong, Ireland, 51 hospitals	EQ-5D, U.K. weights	496 patients	63.1[a]	Septic shock, usual care, survivors at 6 months	0.64
Higgins et al. 2019	Australia, New Zealand, Finland, Hong Kong, Ireland, 51 hospitals	EQ-5D, U.K. weights	458 patients	63.1[a]	Septic shock, usual care, survivors at 12 months	0.64
Linko et al. 2010	Finland, 25 ICUs	EQ-5D, Finnish weights	288 patients	64	Acute respiratory failure, ICU survivors at 1 year	0.70
Hofhuis et al. 2008; Kip et al. 2018	Netherlands, one surgical-medical ICU	SF-36 converted to EQ-5D, U.K. weights[b]	121 patients	66[c]	Severe sepsis, at ICU discharge	0.50
Hofhuis et al. 2008; Kip et al. 2018	Netherlands, one surgical-medical ICU	SF-36 converted to EQ-5D, U.K. weights[b]	101 patients	66[c]	Severe sepsis, at hospital discharge	0.64
Hofhuis et al. 2008; Kip et al. 2018	Netherlands, one surgical-medical ICU	SF-36 converted to EQ-5D, U.K. weights[b]	96 patients	66[c]	Severe sepsis, 3 months after ICU discharge	0.73
Hofhuis et al. 2008; Kip et al. 2018	Netherlands, one surgical-medical ICU	SF-36 converted to EQ-5D, U.K. weights[b]	95 patients	66	Severe sepsis, 6 months after ICU discharge	0.75
					Range of estimates, primary selection criteria	**0.50 to 0.75**
Supplementary estimates based on small samples and/or expert assessments						
Drabinski et al. 2001	U.S., 53 hospitals	EQ-5D, weights not described (assumed U.S.)	93 patients	60	Severe sepsis, 30 days after initial hospitalization (some still hospitalized)	0.56
Drabinski et al. 2001	U.S., 53 hospitals	EQ-5D, weights not described (assumed U.S.)	93 patients	60	Severe sepsis, 60 days after initial hospitalization	0.62
Drabinski et al. 2001	U.S., 53 hospitals	EQ-5D, weights not described (assumed U.S.)	93 patients	60	Severe sepsis, 90 days after initial hospitalization	0.68
Drabinski et al. 2001	U.S., 53 hospitals	EQ-5D, weights not described (assumed U.S.)	93 patients	60	Severe sepsis, 180 days after initial hospitalization	0.69
					Range of estimates, primary and supplementary studies	**0.50 to 0.75**

a. Corresponds to average age of usual care population in the overall study (n=798), not all of whom had HRQoL measured.

b. Authors do not report the source of the weights but refer to an algorithm based on U.K. weights.

c. Corresponds to survivors at 6 months. The larger population of patients mentioned in the trial includes 170 severe sepsis patients, not all of whom had HRQoL measured, and this population had a mean age of 70.

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