

Additional file 3

**Table Disease Model Parameters and Values: scenario specific
The AsiaFluCap Simulator**

SEIR parameter	Description	Scenario*	Value [†]	Justification/notes
p _c	proportion of cases that are critical (require hospitalisation)	MiS	0.002	0.16% [1] and 0.45% [2] of symptomatic cases hospitalised.
		MoS	0.0065	Average of MiS and SeS
		SeS	0.015	CHR: 2.0% - 15.0% [3], 0.00345% - 3.36% depending on age groups [4], 6.0% [5], 0.8%-15.357% age-dependent [6], 5.0%- 13.0% [7].
p _a	Proportion of cases that are asymptomatic	MiS	0.30	Values range from 30 to 50% [2, 8, 9].
		MoS	0.30	
		SeS	0.30	
p _m	Proportion of cases that are mild	MiS	0.6980	$p_m = 1 - p_a - p_c$
		MoS	0.6935	
		SeS	0.6850	
p _v	Proportion of hospitalised cases needing ventilation	MiS	0.1	Assumption based on: 10-39% of hospitalised patients admitted to ICU [10], 21% of hospitalised cases needing intensive care treatment [11], 18%-20% of hospitalised cases needing ventilation, 0.002-0.035% of symptomatic cases need ICU treatment [12-14].
		MoS	0.20	Average of MiS and SeS
		SeS	0.30	Assumption based on: 88% of H5N1 cases required ventilatory support for respiratory failure [15]. Respiratory failure is common, and some patients have developed the acute respiratory distress syndrome with very high mortality [16].
d _c	Proportion of critical outpatients without AV treatment that die	MiS	0.25	Proportion of deaths are extrapolated from the following assumptions: 41.4% (CI 28.9-55.0) CFR for critical illness [17], 17.3% (12.0-24.0) for critical illness [18], 11% of hospitalised cases died [14], 7% of hospitalised cases died [19], 0.007% of symptomatic

				cases died [1]. CFR 2.5% [20]. 0.00147-1.69% CFR depending on age groups [4].
		MoS	0.375	Average of MiS and SeS
		SeS	0.50	Proportion of deaths are extrapolated from the assumptions: Of the 573 H5N1 WHO-confirmed cases, 58.6% have resulted in death [21], CFR Human H5N1 cases ranged from 44% in Egypt to 80% in Indonesia [22, 23]. In 262 (61%) of sporadic cases of H5N1 virus infection reported (from 15 countries) the patient died [16]. 26 patients died out of 67 (CFR: 39%; 95% confidence interval, 27%–51%) [24]. The overall mortality rate of H5N1 cases was 56.5% [25].
d_{ca}	Proportion of critical outpatients under AV treatment that die	MiS	0.150	Based on $d_{ca} = d_c(1-\pi_a)$
		MoS	0.1875	
		SeS	0.200	
d_h	Proportion of hospitalised cases without AV treatment that die	MiS	0.100	Based on $d_h = d_c(1-\pi_h)$.
		MoS	0.178	
		SeS	0.280	
d_{ha}	Proportion of hospitalised cases under AV treatment that die	MiS	0.06	Based on $d_{ha} = d_c(1-\pi_a)(1-\pi_h)$.
		MoS	0.089	
		SeS	0.11	
d_v	Proportion of ventilated cases that die	MiS	0.25	Based on $d_v = (1-\pi_v)$.
		MoS	0.375	
		SeS	0.50	
π_a	Effectiveness of antiviral treatment at reducing death rate in critical cases	MiS	0.40	Assumption based on: [1, 17, 18]. Odds Ratio for reduction in influenza mortality in hospitalised cases: 0.21 (95% confidence interval 0.06-0.80) [26]. Patients who died were less likely to have received AV therapy within 48 hours after symptom onset [19].
		MoS	0.50	Average of MiS and SeS
		SeS	0.60	Assumption based on: of the 284 patients with known

age and outcome who received either oseltamivir alone or no anti-influenza antiviral, the crude overall survival rate of patients who received at least 1 dose of oseltamivir alone (OS+) was 60%, whereas survival among AV- patients was 24% [25]. A higher proportion of cases survived that received any AV treatment compared to those that did not receive AV: 67% vs 7%, $p = 0.003$) [15].

π_h	Effectiveness of hospitalised care (without AV treatment) at reducing death rate in critical cases	MiS	0.6	Assumption based on [1, 17, 18], 7% CFR hospitalised cases [19].
		MoS	0.525	Average of MiS and SeS
		SeS	0.45	Assumption based on: 12% of hospitalised died within 1 day of admission, and 30% died within 2 days [27], 25.5% of hospitalised cases died 1918-19 pandemic [28]
π_v	Effectiveness of ventilators at preventing death in cases needing ventilation	MiS	0.75	Assumption based on [17, 18], 45% of ventilated cases died [19].
		MoS	0.625	Average of MiS and SeS
		SeS	0.50	Assumption based on: 12% of hospitalised died within 1 day of admission, and 30% died within 2 days [27]. Twenty-three (88%) of H5N1 cases required ventilatory support for respiratory failure, 65% of ventilated cases died [15]. Of the 7 who were ventilated, 2 survived [29].

* MiS: Mild Scenario;
MoS: Moderate Scenario;
SeS: Severe Scenario

¶ All parameter values can be changed, either in interface or in the SEIR Model sheet.

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