THE LANCET
Respiratory Medicine

Supplementary appendix

Supplementary Material

Supplementary Table 1: Comorbidities and complications in the whole population of patients hospitalized in France for COVID-19 (from March 1st, 2020, to April 30th, 2020) or seasonal influenza (from December 1st, 2018, to February 28th, 2019), according to their age at admission

COVID-19

Age class (years)	<18	18-30	31-40	41-50	51-60	61-70	71-80	81-90	>90
N	1,227	4,384	6,065	8,892	13,110	15,345	16,265	17,841	6,401
Social deprivation score	-0·2 +/- 1·8	0·1 +/- 1·9*	-0·1 +/- 1·8*	-0·2 +/- 1·8$	-0·3 +/- 1·8$	-0·2 +/- 1·7$	-0·3 +/- 1·7$	-0·4 +/- 1·8$	-0·7 +/- 1·8$
Comorbidity scores									
Charlson score	0·2 +/-0·6*	0·2 +/- 0·7$	0·3 +/- 1·0$	0·5 +/- 1·3$	0·9 +/- 1·7$	1·4 +/- 2·1$	1·7 +/- 2·1$	1·6 +/- 1·9*	1·5 +/- 1·6
Elixhauser score	0·4 +/- 0·3*	0·4 +/- 0·8$	0·6 +/- 1·1$	1·0 +/- 1·4$	1·5 +/- 1·7$	2·2 +/- 2·0$	2·7 +/- 2·0	2·8 +/- 2·0	2·7 +/- 1·9$
Comorbidities									
Hypertension	0·5*	1·4	4·4	12·7	24·8*	37·8*	45·8*	48·1*	48·5*
Dementia	0·1	0	0·1	0·1	0·3$	1·8	7·5	19·9*	25·6*
HIV	0	0·3	0·4$	1·0$	1·2$	0·7	0·2	0·02$	0·02
Heart failure	1·3*	0·5	0·7	1·0$	2·2$	5·4$	9·6$	16·2$	22·1$
Chronic respiratory disease	0·8*	0·1$	0·3$	0·5$	0·8$	1·8$	2·5$	2·4$	1·9
Chronic kidney disease	0·3	0·3$	1·7	1·9$	3·6$	7·1$	11·6	15·0*	16·6
Cirrhosis	0·1	0·1	0·1$	0·6$	1·2$	1·4$	1·3	0·4	0·1
Diabetes	0·7	2·9$	5·7$	9·9	17·1	25·5*	28·8*	22·4*	13·2
Peripheral vascular disease	0	0·2	0·1	0·6	1·5$	3·6$	5·1	5·2	4·6
Overweight	1·3*	7·6*	11·5*	15·1*	16·4*	16·1*	11·6*	5·9	2·4
Body mass index (BMI)	1·0*	6·7*	10·1*	13·1*	13·7*	13·7*	10·0*	4·9	2·0
Dyslipidemia	0	0·2	0·4	1·6$	3·8	6·9	8·4*	6·4	4·4
Deficiency Anemia	1·7	0·8$	1·7	1·9$	2·7	3·9	5·0	5·7	6·1
Pulmonary bacterial infection	4·8*	2·4$	3·7$	6·5$	9·4$	11·3	8·7	4·0$	3·6$
Immunocompromised	3·4	1·4$	1·6$	2·5$	3·7$	5·9$	5·8	3·1*	1·2
Complications									
Acute respiratory failure	12·1*	5·4	12·1*	19·2*	27·3*	33·8*	33·4*	30·8*	28·3*
Pulmonary embolism	0·4*	1·2*	2·0*	3·3*	4·5*	5·3*	4·0*	2·4*	2·0*
Venous thrombosis (including pulmonary embolism)	0·6*	1·8*	2·7*	4·5*	6·4*	7·4*	5·6*	3·6*	3·0*

Septic shock	0·7*	0·5	0·9$	2·0$	3·8	5·5*	4·2*	1·2	0·6
Myocardial infarction	0	0	0·1	0·3	0·5$	0·8$	0·8$	0·9$	0·9$
Atrial fibrillation	0	0·2	0·3	1·2$	3·0$	8·8$	17·2$	25·7$	29·2$
Stroke	0·2	0·2	0·3	0·5	0·9$	1·5	1·5	1·7	1·6
Acute kidney failure	1·6*	0·7$	1·6$	3·1$	5·8$	9·0*	9·5*	7·1*	6·3

Seasonal Influenza

Age class (years)	<18	18-30	31-40	41-50	51-60	61-70	71-80	81-90	>90
N	8,942	1,836	1,568	1,626	3,164	5,624	7,693	11,276	4,090
Social deprivation score	-0·04 +/- 1·4	-0·2 +/- 1·6*	-0·3 +/- 1·7*	-0·03 +/- 1·5$	-0·04 +/- 1·5$	-0·1 +/- 1·5$	-0·2 +/- 1·6$	-0·2 +/- 1·6$	-0·5 +/- 1·7$
Comorbidity scores									
Charlson score	0·1 +/-0·5*	0·3 +/- 0·8$	0·5 +/- 1·2$	1·0 +/- 1·8$	1·5 +/- 2·0$	1·8 +/- 2·1$	1·8 +/- 2·0$	1·6 +/- 1·8*	1·5 +/- 1·6
Elixhauser score	0·3 +/- 2·6*	0·5 +/- 0·9$	0·8 +/- 1·1$	1·5 +/- 1·6$	2·1 +/- 1·9$	2·5 +/- 2·1$	2·7 +/- 2·1	2·8 +/- 2·0	2·8 +/- 1·9$
Comorbidities									
Hypertension	0·2*	1·5	3·9	11·3	21·2*	32·2*	41·0*	45·8*	44·6*
Dementia	0	0	0	0·2	0·6$	1·8	7·6	16·1*	20·2*
HIV	0	0·3	1·6$	3·0$	1·7$	0·7	0·3	0·1$	0
Heart failure	0·2*	0·6	1·1	3·4$	6·8$	10·7$	16·2$	24·5$	32·9$
Chronic respiratory disease	0·4*	1·4$	1·3$	3·7$	6·0$	8·0$	6·5$	4·2$	1·9
Chronic kidney disease	0·2	0·8$	2·4	3·9$	5·1$	8·2$	11·2	13·9*	15·5
Cirrhosis	0·02	0·3	0·6$	1·7$	3·5$	3·0$	1·4	0·4	0·3
Diabetes	0·8	5·9$	7·5$	10·4	16·7	23·9*	27·3*	21·0*	13·2
Peripheral vascular disease	0·1	0·2	0·3	0·9	3·3$	5·8$	5·5	4·8	4·7
Overweight	0·1*	4·1*	6·3*	10·2*	10·8*	11·4*	9·4*	5·8	2·5
Body mass index (BMI)	0·1*	3·7*	5·4*	9·5*	9·5*	10·5*	8·4*	5·0	2·0
Dyslipidemia	0·02	0	0·5	2·3$	4·0	7·2	7·4*	6·7	4·3
Deficiency Anemia	1·2	1·9$	2·1	3·3$	3·3	4·1	5·2	6·3$	6·7
Pulmonary bacterial infection	2·0*	3·9$	6·8$	10·3$	11·0$	11·1	8·5	6·7$	5·9$
Immunocompromised	2·6	3·2$	5·2$	7·1$	8·9$	8·5$	6·0	2·5*	1·2
Complications									
Acute respiratory failure	7·5*	6·4	9·2*	17·0*	25·1*	26·4*	21·9*	18·1*	18·4*
Pulmonary embolism	0*	0·2*	0·6*	1·0*	1·3*	1·2*	1·4*	1·1*	1·1*

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Venous thrombosis (including pulmonary embolism)	0·1*	0·5*	1·1*	2·1*	2·6*	2·6*	2·3*	1·9*	2·0*
Septic shock	0·2*	0·8	1·6$	3·6$	4·3	4·1*	3·3*	1·5	0·4
Myocardial infarction	0·01	0	0·3	0·5	1·0$	1·7$	1·5$	1·7$	1·6$
Atrial fibrillation	0·01	0·2	0·3	2·3$	6·0$	12·2$	21·4$	29·6$	32·3$
Stroke	0·1	0·1	0·4	0·7	1·4$	1·6	1·7	1·8	2·0
Acute kidney failure	0·3*	1·4$	2·4$	4·2$	7·1$	7·3*	6·4*	6·3*	5·8

* significantly more frequent in the COVID-19 group (p<0·05)

$ significantly more frequent in the seasonal influenza group (p<0·05)

Supplementary Table 2: Case fatality rates by main comorbidities of patients hospitalized in France for COVID-19 (from March 1st, 2020, to April 30th, 2020) or seasonal influenza (from December 1st, 2018, to February 28th, 2019)

	Hypertension	Dementia	HIV	Heart failure	Chronic respiratory disease	Chronic kidney disease	Diabetes	Peripheral vascular disease	Overweight	BMI	Deficiency Anemia	Pulmonary bacterial infection	Immunocompromised
COVID-19	30· 5%	30·5%	11·6%	31·5%	28·8%	28·5%	22·2%	27·6%	14·8%	15·0%	14·5%	25·4%	27·4%
Influenza	11·1%	11·1%	3·4%	13·67%	11·0%	10·0%	6·6%	9·4%	5·4%	5·5%	5·1%	13·9%	10·6%

Supplementary Table 3: Crude in-hospital case fatality rates in the whole population of patients hospitalized in France for COVID-19 (from March 1st, 2020, to April 30th, 2020) or seasonal influenza (from December 1st, 2018, to February 28th, 2019), according to their age at admission
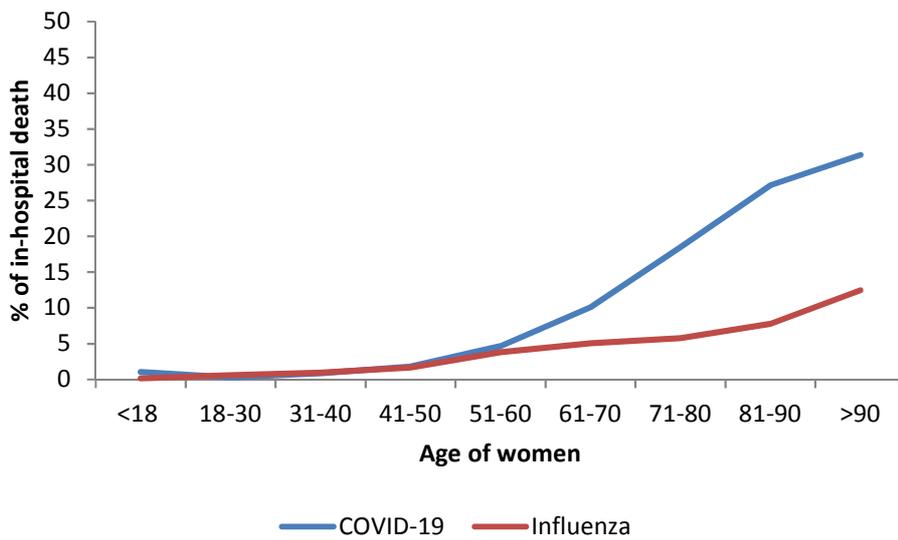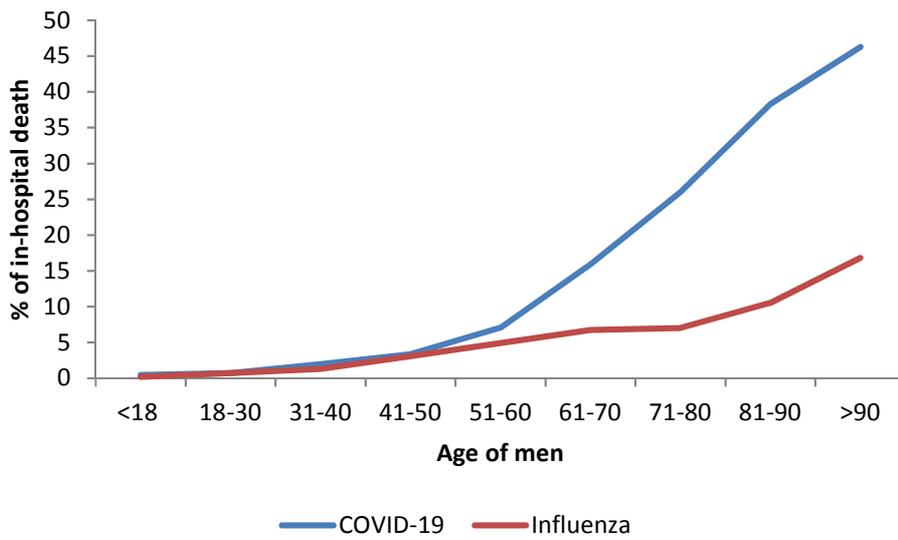
COVID-19

Age class (years)	<18	18-30	31-40	41-50	51-60	61-70	71-80	81-90	>90
Number	1,227	4,384	6,065	8,892	13,110	15,345	16,265	17,841	6,401
Males (%)	52·9	38·3 *	45·5 *	54·4	59·1 *	61·8 *	60·5 *	47·2 *	32·8
Intensive care support (n, %)	36 (2·9) *	258 (5·9)	625 (10·3)	1,414 (15·9) $	3,045 (23·2)	4,322 (28·2) *	3,526 (21·7) *	1,172 (6·6) $	187 (2·9)
In-hospital death (n, %)	9 (0·7) *	20 (0·5)	84 (1·4)	237 (2·7)	796 (6·1) *	2,103 (13·7) *	3,750 (23·1) *	5,783 (32·4) *	2,322 (36·3) *

Seasonal influenza

Age class (years)	<18	18-30	31-40	41-50	51-60	61-70	71-80	81-90	>90
Number	8,942	1,836	1,568	1,626	3,164	5,624	7,693	11,276	4,090
Males (%)	54·7	29·8 *	34·1 *	52·0	54·7 *	56·0 *	55·0 *	43·5 *	31·6
Intensive care support (n, %)	116 (1·3) *	132 (7·2)	181 (11·5)	307 (18·9) $	710 (22·4)	1,189 (21·1) *	1,214 (15·8) *	950 (8·4) $	127 (3·1)
In-hospital death (n, %)	16 (0·2) *	12 (0·7)	17 (1·1)	39 (2·4)	140 (4·4) *	338 (6·0) *	498 (6·5) *	1,014 (9·0) *	566 (13·8) *

* significantly more frequent in the COVID-19 group (p<0·05)
$ significantly more frequent in the seasonal influenza group (p<0·05)

Supplementary Figure 1: Case fatality rates of patients hospitalized in France for COVID-19 (from March 1st, 2020, to April 30th, 2020) or seasonal influenza (from December 1st, 2018, to February 28th, 2019), according to their age at admission and gender

Supplementary Table 4: Crude in-hospital case fatality rates in the pediatric population (under 18 years) hospitalized in France for COVID-19 (from March 1st, 2020, to April 30th, 2020) or seasonal influenza (from December 1st, 2018, to February 28th, 2019), according to their age at admission
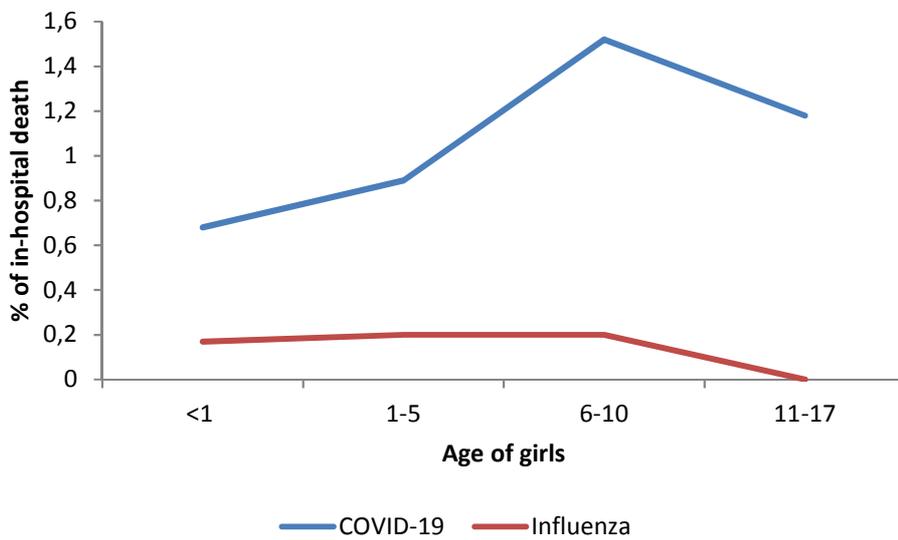
COVID-19

Age class (years)	<1	1-5	0-5	6-10	11-17
Number	365	248	613	156	458
Males (%)	60·0	54·8	57·9	57·7	44·5 $
Intensive care support (n, %)	5 (1·4) *	9 (3·6) *	14 (2·3) *	3 (1·9)	19 (4·2)
In-hospital death (n, %)	1 (0·3)	2 (0·8)	3 (0·5)	1 (0·6)	5 (1·1) *

Seasonal influenza

Age class (years)	<1	1-5	0-5	6-10	11-17
Number	2,707	4,266	6,973	1,165	804
Males (%)	56·5	52·9	54·3	57·7	54·0 $
Intensive care support (n, %)	9 (0·3) *	56 (1·3) *	65 (0·9) *	16 (1·4)	35 (4·4)
In-hospital death (n, %)	4 (0·2)	9 (0·2)	13 (0·2)	2 (0·2)	1 (0·1) *

* significantly more frequent in the COVID-19 group (p<0·05)
$ significantly more frequent in the seasonal influenza group (p<0·05)

Supplementary Figure 2: Case fatality rates of children hospitalized in France for COVID-19 (from March 1st, 2020, to April 30th, 2020) or seasonal influenza (from December 1st, 2018, to February 28th, 2019), according to their age at admission and gender
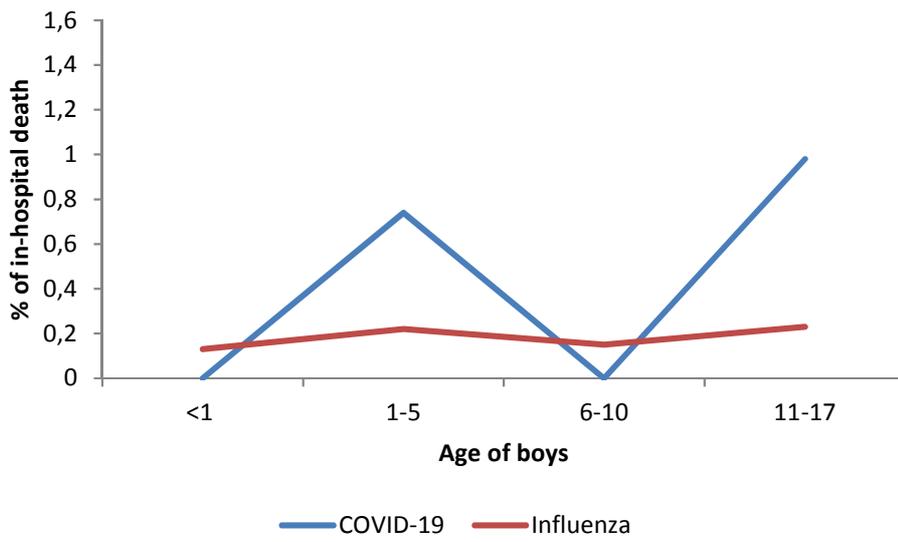
Supplementary Table 5: Main baseline comorbidities (%) in the pediatric population (under 18 years) hospitalized in France for COVID-19 (from March 14th, 2020, to April 30th, 2020) or seasonal influenza (from December 1st, 2018, to February 28th, 2019), according to their age at admission

COVID-19

Age class (years)	<1	1-5	0-5	6-10	11-17
N	365	248	613	156	458
Hypertension	0	0·81	0·33	1·28	0·44
Dementia	0	0	0	0	0·22
HIV	0	0	0	0	0
Heart failure	0·27	0·40	0·33	3·85 *	1·75
Chronic respiratory disease	1·1 *	0·81	0·98 *	0·64	0·66 $
Cirrhosis	0	0·40	0·16	0	0
Diabetes	0	0·40	0·16	0	1·53 $
Peripheral vascular disease	0	0	0	0	0
Dyslipidemia	0	0	0	0	0
Deficiency anaemia	2·19	3·63 *	2·77 *	1·28	0·44
Immunocompromised	2·47 *	4·44	3·26 *	3·85	
Overweight	0	0	0	0	3·49 *
Obese	0	0	0	0	2·62 *

Seasonal influenza

Age class (years)	<1	1-5	0-5	6-10	11-17
N	2707	4266	6973	1165	804
Hypertension	0	0·23	0·14	0·26	0·5
Dementia	0	0	0	0	0
HIV	0	0	0	0	0
Heart failure	0·15	0·16	0·16	0 *	0·62
Chronic respiratory disease	0·07 *	0·14	0·11 *	0·52	2·11 $
Cirrhosis	0	0·02	0·01	0	0·12
Diabetes	0	0·52	0·32	1·72	4·1 $
Peripheral vascular disease	0·07	0	0·03	0·26	0·12
Dyslipidemia	0	0·02	0·01	0·09	0
Deficiency anaemia	1·29	1·24 *	1·26 *	0·60	1·24
Immunocompromised	1·15 *	2·60	2·04 *	4·12	
Overweight	0	0·02	0·01	0·17	1·12 *
Obese	0	0·02	0·01	0	0·5 *

* significantly more frequent in the COVID-19 group (p<0·05)

$ significantly more frequent in the seasonal influenza group (p<0·05)

Supplementary Table 6: Main baseline characteristics of patients hospitalized in France for COVID-19 (from March 14th, 2020, to April 30th, 2020) or seasonal influenza (from December 1st, 2018, to February 28th, 2019)

	COVID-19	2018-2019 seasonal influenza	*p*-value
Number of patients	85,440	45,819	
Males (n, %)	45,345 (53·1%)	22,118 (48·3%)	<0·0001
Age			<0·0001
Mean+/-std	65 +/- 20	59 +/- 32	
Med [Q1-Q3]	68 [52-82]	71 [34-84]	
Min-Max	0-106	0-108	
<18	1,143 (1·3%)	8,942 (19·5)	
18-30	4,164 (4·9)	1,836 (4·0)	
31-40	5,806 (6·8)	1,568 (3·4)	
41-50	8,554 (10·0)	1,626 (3·6)	
51-60	12,591 (14·7)	3,164 (6·9)	
61-70	14,633 (17·1)	5,624 (12·3)	
71-80	15,439 (18·1)	7,693 (16·8)	
81-90	16,996 (19·9)	11,276 (24·6)	
>90	6,114 (7·2)	4,090 (8·9)	
Social deprivation score			
Mean+/-std	-0·26 +/- 1·78	-0·17 +/- 1·56	<0·0001
Med [Q1-Q3]	-0·14 [-1·23 – 0·93]	-0,01 [-0,96 - 0,87]	
Lowest	21,895 (26·9)	9,195 (21·2)	<0·0001
Second	19,681 (24·2)	11,223 (25·9)	
Third	19,008 (23·4)	12,608 (29·1)	
Highest	20,767 (25·5)	10,256 (23·7)	
Comorbidity scores			
Charlson			
Mean+/-std	17·17 +/- 1·82	1·23 +/- 1·78	<0·0001
Med [Q1-Q3]	0 [0-2]	1 [0-2]	
0	43,373 (50·8)	21,715 (47·4)	<0·0001
1	18,922 (22·2)	10,539 (23·0)	
2	10,055 (11·8)	6,132 (13·4)	
>=3	13,090 (15·3)	7,433 (16·2)	
Elixhauser			
Mean+/-std	2·00 +/- 1·95	2·01 +/- 2·03	0·8389
Med [Q1-Q3]	2 [0-3]	2 [0-3]	
0	24,499 (28·7)	14,080 (30·7)	<0·0001
1	16,732 (19·6)	8,691 (19·0)	
2	14,860 (17·4)	7,280 (15·9)	
>=3	29,349 (34·4)	15,768 (34·4)	
Comorbidities			
Hypertension	28,337 (33·2)	12,921 (28·2)	<0·0001
Dementia	6,458 (7·6)	3,345 (7·3)	0·0900
HIV	419 (0·5)	205 (0·5)	0·2804
Heart failure	6,681 (7·8)	6,266 (13·7)	<0·0001
Chronic respiratory disease	1,345 (1·6)	1,830 (4·0)	<0·0001
Chronic kidney disease	6,996 (8·2)	3,821 (8·3)	0·3425

Cirrhosis	684 (0·8)	489 (1·1)	<0·0001
Diabetes	16,297 (19·1)	7,352 (16·1)	<0·0001
Peripheral vascular disease	2,705 (3·2)	1,614 (3·5)	0·0006
Overweight	9,762 (11·4)	2,811 (6·1)	<0·0001
Body mass index (BMI)	8,303 (9·7)	2,491 (5·4)	<0·0001
30-40	7,171 (8·4)	2,078 (4·5)	
40-50	2,286 (2·7)	706 (1·5)	
>50	1,337 (1·6)	192 (0·4)	<0·0001
Dyslipidemia	4,262 (5·0)	2,072 (4·5)	0·0002
Deficiency Anemia	3,277 (3·8)	1,946 (4·3)	0·0003
Pulmonary bacterial infection	5,876 (6·9)	3,142 (6.9)	0·8918
Immunocompromised	3,154 (3·7)	2,033 (4.4)	<0·0001

Supplementary Table 7: Main outcomes of patients hospitalized in France for COVID-19 (from March 14th, 2020, to April 30th, 2020) or seasonal influenza (from December 1st, 2018, to February 28th, 2019)

	COVID-19	2018-2019 seasonal influenza	*p*-value
Number of patients	85,440	45,819	
Acute respiratory failure	23,044 (27.0)	7,977 (17·4)	<0·0001
Pulmonary embolism	2,985 (3•5)	412 (0·9)	<0·0001
Venous thrombosis (including pulmonary embolism)	4,208 (4•9)	766 (1·7)	<0·0001
Septic shock	2,346 (2 •8)	918 (2·0)	<0·0001
Myocardial infarction	523 (0•6)	506 (1·1)	<0·0001
Atrial fibrillation	10,552 (12 •4)	7,222 (15·8)	<0·0001
Stroke	1,003 (1•2)	569 (1·2)	0·2809
Hemorrhagic stroke	245 (0•3)	93 (0·2)	0·0043
Ischemic stroke	668 (0•8)	405 (0·9)	0·0503
Transient Ischemic Attack	146 (0•2)	92 (0·2)	0·2247
Acute kidney failure	5,340 (6•3)	2,227 (4·9)	<0·0001
Invasive mechanical ventilation	8,162 (9•6)	1,833 (4·0)	<0·0001
Intensive care support	13,726 (16•1)	4,926 (10·8%)	<0·0001
Mean stay in ICU (days, +/- SD)	15 +/- 14	8 +/- 9	<0·0001
Median stay in ICU (days, Q1-Q3)	10 [4-21]	5 [2-10]	<0·0001
Mechanical ventilation among ICU patients	9,818 (71·5)	3,004 (61·0)	<0·0001
In-hospital death	14,095 (16•5)	2,640 (5·8)	<0·0001
In hospital death that would be expected with the same influenza age-specific mortality rates	5,108 (6•0)		
Standardized mortality ratio (%)	263		
In-hospital death among ICU patients	3,618 (26•4)	885 (18.0)	<0•0001
In-hospital death among ICU patients with mechanical ventilation	3,037 (30•9)	780 (26•0)	<0•0001
In-hospital death among ICU patients non ventilated	435 (16•6)	81 (5·4)	<0•0001

Supplementary Table 8: Crude in-hospital case fatality rates in the whole population of patients hospitalized in France for COVID-19 (from March 14th, 2020, to April 30th, 2020) or seasonal influenza (from December 1st, 2018, to February 28th, 2019), according to their age at admission

COVID-19

Age class (years)	<18	18-30	31-40	41-50	51-60	61-70	71-80	81-90	>90
Number	1,143	4,164	5,806	8,554	12,591	14,633	15,439	16,996	6,114
Males (%)	52.8	38.2 *	45.5 *	54.4	59.2 *	62.1 *	60.5 *	47.1 *	32.4
Intensive care support (%)	2.9*	5.8 $	10.4	15.8 $	23.1	28.0 *	21.2 *	6.1 $	2.8
In-hospital death (%)	0.7*	0.5	1.4	2.5	6.1 *	13.4 *	22.5 *	31.8 *	35.4 *

Seasonal influenza

Age class (years)	<18	18-30	31-40	41-50	51-60	61-70	71-80	81-90	>90
Number	8,942	1,836	1,568	1,626	3,164	5,624	7,693	11,276	4,090
Males (%)	54·7	29·8 *	34·1 *	52·0	54·7 *	56·0 *	55·0 *	43·5 *	31·6
Intensive care support (%)	1·3 *	7·2	11·5	18·9 $	22·4	21·1 *	15·8 *	8·4 $	3·1
In-hospital death (%)	0·2 *	0·7	1·1	2·4	4·4 *	6·0 *	6·5 *	9·0 *	13·8 *

* significantly more frequent in the COVID-19 group (p<0·05)
$ significantly more frequent in the seasonal influenza group (p<0·05)

Supplementary Table 9: Crude in-hospital case fatality rates in the pediatric population (under 18 years) hospitalized in France for COVID-19 (from March 14th, 2020, to April 30th, 2020) or seasonal influenza (from December 1st, 2018, to February 28th, 2019), according to their age at admission

COVID-19

Age class (years)	<1	1-5	0-5	6-10	11-17
Number	355	230	585	142	416
Males (%)	60.6	53.9	58.0	55.6	44.5 $
Intensive care support (%)	5 (1.4) *	9 (3.9) *	14 (2.4) *	2 (1.4)	17 (4.1)
In-hospital death (%)	1 (0.3)	2 (0.9)	3 (0.5)	1 (0.7)	4 (1.0) *

Seasonal influenza

Age class (years)	<1	1-5	0-5	6-10	11-17
Number	2,707	4,266	6,973	1,165	804
Males (%)	56·5	52·9	54·3	57·7	54·0 $
Intensive care support (%)	9 (0·3) *	56 (1·3) *	65 (0·9) *	16 (1·4)	35 (4·4)
In-hospital death (%)	4 (0·2)	9 (0·2)	13 (0·2)	2 (0·2)	1 (0·1) *

* significantly more frequent in the COVID-19 group (p<0·05)
$ significantly more frequent in the seasonal influenza group (p<0·05)