Supplemental material

Supplementary Table S1: ICD-10 and CCAM codes used to identify chronic respiratory diseases, respiratory complications, and potential confounding factors

Codes	Respiratory disease
Chronic respiratory disease	
J961	Chronic respiratory failure
C34 and C45	Lung cancer
I270	Pulmonary hypertension - PH
G473	Sleep apnea
J40, J41, J42 and J44	Chronic obstructive pulmonary disease - COPD
J43 and J982	Emphysema
J45 and J46	Asthma
D86	Pulmonary sarcoidosis
J84	Interstitial lung disease
E840	Cystic fibrosis with pulmonary manifestations
Respiratory complication	
J10, J11, J12, J13, J14, J15, J16, J17, and J18 associated with CCAM codes GLLD006, GLLD015, GLLD008, GLLD004, GLLD007, GLLD009	Ventilator-acquired pneumonia
B206 and B59	Pneumocystis pneumonia
B440 and B441	Aspergillosis pneumonia
J86	Pleural empyema
J85	Lung abscess
J93	Pneumothorax
J96	Acute respiratory failure
I26	Pulmonary embolism

Potential confounding factors

E66 except E6603, E6613, E6683, E6693	Obesity
E10, E11, E12, E13, E14, O24	Diabetes
I10, I11, I12, I13, I15, O10, O13 and O16	Hypertension
I50	Heart failure

Supplementary Table S2: Respiratory history of patients hospitalized in France for COVID-19 (from March 1 to April 30, 2020) or seasonal influenza (from December 1, 2018 to February 28, 2019), according to their age at admission

COVID19

Age strata (years)	<18	18-30	31-40	41-50	51-60	61-70	71-80	81-90	>90
Number of patients	1,227	4,384	6,065	8,892	13,110	15,345	16,265	17,841	6,401
Chronic respiratory failure (%)	10 (0.81) *	5 (0.11) $	18 (0.3) $	46 (0.52) $	110 (0.84) $	276 (1.8) $	410 (2.52) $	435 (2.44) $	123 (1.92)
Sleep apnea (%)	4 (0.33)	10 (0.23)	71 (1.17) *	212 (2.38) $	599 (4.57)	979 (6.38)	987 (6.07)	635 (3.56)	87 (1.31)
Pulmonary hypertension (%)	0 (0)	2 (0.05)	2 (0.03) $	8 (0.09)	24 (0.18) $	63 (0.41)	91 (0.56)	112 (0.63) $	39 (0.61)
Chronic obstructive pulmonary disease (%)	3 (0.24)	8 (0.18) $	31 (0.51) $	129 (1.45) $	448 (3.42) $	1,120 (7.3) $	1,469 (9.03) $	1,342 (7.52) $	316 (4.94) $
Asthma (%)	105 (8.56) *	248 (5.66) $	308 (5.08) $	504 (5.67) $	601 (4.58) $	562 (3.66) $	456 (2.80) $	375 (2.10) $	114 (1.78) $
Cystic fibrosis with pulmonary manifestations (%)	4 (0.33)	6 (0.14) $	4 (0.07) $	6 (0.07)	0 (0) $	0 (0)	0 (0)	0 (0)	0 (0)
Lung cancer (%)	0 (0)	2 (0.05)	5 (0.08)	32 (0.36) $	135 (1.03) $	312 (2.03) $	311 (1.91)	158 (0.89) *	22 (0.34)
Emphysema (%)	1 (0.08)	7 (0.16)	21 (0.35)	83 (0.93)	192 (1.46) $	418 (2.72) $	392 (2.41) *	260 (1.46) *	52 (0.81) *
Pulmonary sarcoidosis (%)	0 (0)	3 (0.07)	12 (0.20)	21 (0.24)	35 (0.27)	41 (0.27) $	33 (0.20)	12 (0.07)	2 (0.03)
Interstitial lung diseases (%)	10 (0.81) *	23 (0.52) *	46 (0.76)	99 (1.11)	223 (1.70)	350 (2.28) *	403 (2.48) *	379 (2.12) *	78 (1.22) *

Seasonal influenza

Age strata (years)	<18	18-30	31-40	41-50	51-60	61-70	71-80	81-90	>90
Number of patients	8,942	1,836	1,568	1,626	3,164	5,624	7,693	11,276	4,090
Chronic respiratory failure (%)	31 (0.35) *	25 (1.36) $	21 (1.34) $	60 (3.69) $	191 (6.04) $	448 (7.97) $	498 (6.47) $	478 (4.24) $	78 (1.91)
Sleep apnea (%)	11 (0.12)	7 (0.38)	8 (0.51) *	56 (3.44) $	142 (4.49)	349 (6.21)	455 (5.91)	378 (3.35)	37 (0.90)
Pulmonary hypertension (%)	3 (0.03)	2 (0.11)	6 (0.38) $	3 (0.18)	12 (0.38) $	31 (0.55)	49 (0.64)	106 (0.94) $	35 (0.86)
Chronic obstructive pulmonary disease (%)	16 (0.18)	12 (0.65) $	17 (1.08) $	128 (7.87) $	522 (16.5) $	1,186 (21.09) $	1,295 (16.83) $	1,208 (10.71) $	253 (6.19) $
Asthma (%)	528 (5.9) *	147 (8.01) $	132 (8.42) $	177 (10.89) $	232 (7.33) $	265 (4.71) $	314 (4.08) $	337 (2.99) $	98 (2.40) $
Cystic fibrosis with pulmonary manifestations (%)	19 (0.21)	32 (1.74) $	20 (1.28) $	4 (0.25)	2 (0.06) $	0 (0)	1 (0.01)	1 (0.01)	0 (0)
Lung cancer (%)	0 (0)	2 (0.11)	2 (0.13)	12 (0.74) $	64 (2.02) $	147 (2.61) $	123 (1.60)	73 (0.65) *	8 (0.20)
Emphysema (%)	9 (0.1)	4 (0.22)	7 (0.45)	22 (1.35)	98 (3.1) $	182 (3.24) $	126 (1.64) *	89 (0.79) *	16 (0.39) *
Pulmonary sarcoidosis (%)	0 (0)	2 (0.11)	6 (0.38)	8 (0.49)	15 (0.47)	26 (0.46) $	16 (0.21)	7 (0.06)	1 (0.02)

| Interstitial lung diseases (%) | 12 (0.13) * | 3 (0.16) * | 15 (0.96) | 22 (1.35) | 41 (1.30) | 83 (1.48) * | 130 (1.69) * | 133 (1.18) * | 32 (0.78) * |

* significantly more frequent in the COVID-19 group (p<0.05)
$ significantly more frequent in the seasonal influenza group (p<0.05)

Supplementary Table S3: Respiratory complications of patients hospitalized in France for COVID-19 (from March 1 to April 30, 2020) or seasonal flu (from December 1, 2018 to February 28, 2019)

	COVID-19	2018-2019 seasonal flu	p-value
Number of patients	89,530	45,819	
Pulmonary embolism n (%)	**3086 (3.45)**	412 (0.90)	<0.0001
Ventilator-acquired pneumonia n (%)	7803 (8.72)	**1710 (3.73)**	<0.0001
Pneumocystis pneumonia n (%)	3 (0.00)	**22 (0.05)**	<0.0001
Aspergillosis pneumonia n(%)	210 (0.23)	112 (0.24)	0.7240
Pleural empyema n (%)	72 (0.08)	44 (0.10)	0.3531
Lung abscess n (%)	103 (0.12)	60 (0.13)	0.4247
Pneumothorax n (%)	**374 (0.42)**	89 (0.19)	<0.0001

Groups where prevalence is significantly increased are bolded

Supplementary Table S4: Respiratory morbidity, need for ICU and mortality of the patients hospitalized in France for COVID-19 (from March 1 to April 30, 2020): comparison between patients with and without chronic respiratory disease (for patients with CRD, we included patients with only one CRD)

	CF	Lung cancer	COPD	Asthma	Pulmonary sarcoidosis	ILD	Emphysema	Sleep apnea	CRF	PH	No CRD
Number of patients (%)	13 (0.1)	698 (4.3)	3013 (26.0)	2641 (22.8)	115 (1.0)	1171 (10.1)	734 (6.3)	2480 (21.4)	529 (4.6)	217 (1.9)	
Pulmonary embolism n (%)	0 (0)	30 (4.3)	85 (2.8)	84 (3.2)	8 (7.0)	69 (5.9) *	54 (7.4) *	106 (4.3) *	12 (2.3)	26 (12.0) *	3.32%
VAP n (%)	1 (7.7)	32 (4.6) $	234 (7.8)	254 (9.6) *	21 (18.3) *	230 (19.6) *	123 (16.8) *	499 (20.1) *	38 (7.2)	32 (14.8) *	7.9%
Pneumocystis pneumonia n (%)	0	0	0	0	0	0	0	0	0	0	0%
Aspergillosis pneumonia n (%)	1 (7.7) *	0 (0)	10 (0.3) *	10 (0.4) *	0 (0)	9 (0.8) *	6 (0.8) *	8 (0.3)	3 (0.6)	1 (0.5)	0.2%
Pleural empyema n (%)	0 (0)	6 (0.9) *	3 (0.1)	2 (0.1)	1 (0.9)	2 (0.2)	1 (0.1)	2 (0.1)	0 (0)	0 (0)	0.1%
Lung abscess n (%)	0 (0)	4 (0.6) *	2 (0.1)	0 (0)	0 (0)	9 (0.1) *	6 (0.1) *	2 (0.1)	1 (0.2)	0 (0)	0.1%
Pneumothorax n (%)	1 (7.7) *	9 (1.3) *	15 (0.5)	7 (0.3)	0 (0)	15 (1.3) *	24 (3 .3) *	19 (0.8) *	3 (0.6)	2 (0.9)	0.3%
Acute respiratory failure (%)	2 (15.4)	241 (34.5) *	1062 (35.3) *	716 (27.1) *	29 (25.2)	516 (44.1) *	271 (37.0) *	1003 (40.4) *	203 (38.4) *	94 (43.3) *	25.2%
ICU (%)	1 (7.7)	74 (10.6) $	503 (16.7) *	463 (17.5) *	35 (30.4)	364 (31.1) *	200 (27.3) *	807 (32.5) *	91 (17.2)	57 (26.3) *	14.9%
In-hospital death (%)	0 (0)	293 (42.0) *	750 (24.9) *	223 (8.4) $	24 (20.9)	227 (19.4) *	135 (18.4)	426 (17.2)	152 (28.7) *	60 (27.7) *	16.1%

* significantly more frequent in the chronic respiratory disease group compared to the group with no chronic respiratory disease (p<0.05)

$ significantly less frequent in the chronic respiratory disease group compared to the group with no chronic respiratory disease (p<0.05)

CRF: chronic respiratory failure, PH: pulmonary hypertension, COPD: chronic obstructive pulmonary disease, ILD: interstitial lung disease, CF: cystic fibrosis, VAP: ventilator-associated pneumonia, No CRD: No chronic respiratory disease

Supplementary Table S5· Risk of intensive care requiring and mortality for the patients hospitalized in France for COVID-19 (from March 1 to April 30, 2020) according to their chronic respiratory disease (only one CRD)

	ICU	Death
	Adjusted OR [95% IC]	Adjusted OR [95% IC]
No CRD	1	1
CF	0.46 [0.1-3.60]	-
Lung cancer	**0.72 [0.57-0.93]**	3.95 [3.36-4.64]
COPD	0.96 [0.87-1.07]	1.09 [1.01-1.19]
Asthma	1.15 [1.04-1.28]	**0.81 [0.70-0.94]**
Pulmonary sarcoidosis	2.22 [1.47-3.38]	2.12 [1.31-3.243]
ILD	2.29 [2.01-2.61]	1.07 [0.92-1.25]
Emphysema	1.92 [1.62-2.28]	1.01 [0.83-1.23]
Sleep apnea	1.38 [1.26-1.52]	0.93 [0.83-1.04]
CRF	1.02 [0.80-1.29]	1.30 [1.06-1.58]
PH	1.81 [1.31-2.49]	1.21 [0.88-1.66]

Chronic respiratory diseases significantly less at risk are bolded

OR adjusted on obesity, diabetes, hypertension, heart failure, atherosclerotic heart disease, sex, and age as a continuous variable.

CRF: chronic respiratory failure, PH: pulmonary hypertension, COPD: chronic obstructive pulmonary disease, ILD: interstitial lung disease, CF: cystic fibrosis, VAP: ventilator-associated pneumonia, No CRD: No chronic respiratory disease