STROBE Statement—Checklist of items that should be included in reports of ***cohort studies***

	Item No	Recommendation
Title and abstract	1	*(a)* Indicate the study's design with a commonly used term in the title or the abstract
		(b) Cohort study
		(*b*) Provide in the abstract an informative and balanced summary of what was done and what was found
Introduction		
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported Influenza virus: major cause of ARDS Influenza virus-related ARDS: particular pathophysiology which can affect the prognosis of ARDS Few published comparisons between ARDS patients whether ARDS is due or not to influenza
Objectives	3	State specific objectives, including any prespecified hypotheses To compare mortality at day 28 between ARDS due to influenza virus alone with ARDS due to other causes
Methods		
Study design	4	Present key elements of study design early in the paper Retrospective analysis of data collected prospectively with no missing data. Comparison of short-term survival on the whole population and after matching process
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection Setting: a mixed 21-bed ICU in a university hospital Study period: from October 2009 to March 2020 Follow-up period: from diagnosis of ARDS until day 28
Participants	6	*(a)* Give the eligibility criteria, and the sources and methods of selection of participants. Describe methods of follow-up Patients with ARDS and PaO2/FiO2 ratio≤150 mmHg (n= 572) Data base started in 2005 Short-term follow-up (day 28)
		(b) For matched studies, give matching criteria and number of exposed and unexposed Matching criteria: age, severity (SAPSII score), year of admission, comorbidities, ARDS severity based on Berlin criteria, treatments (prone positioning, vasopressors and steroids) and organ supports (ECMO and renal replacement) Exposed/non-exposed: 73/73

Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable Outcomes and predictors were described and defined; potential confounders discussed.
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group Source of data: data base of our ICU Statistical tests used for comparisons were described in the statistical section
Bias	9	Describe any efforts to address potential sources of bias Calcula tion of the E-value for cohort with variable of interest >15%
Study size	10	Explain how the study size was arrived at Study cohort stopped before admission in the ICU of the first patients with Covid 19 infection.
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why Comparisons between proportions of patients
Statistical methods	12	(*a*) Describe all statistical methods, including those used to control for confounding Made
		(*b*) Describe any methods used to examine subgroups and interactions NA
		(*c*) Explain how missing data were addressed no missing data
		(*d*) If applicable, explain how loss to follow-up was addressed no loss to follow-up
		(*e*) Describe any sensitivity analyses calculation of the E-value
Results		
Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed patients at risk were shown with survival curves
		(b) Give reasons for non-participation at each stage NA
		(c) Consider use of a flow diagram we believe not useful in the present study
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders Made
		(b) Indicate number of participants with missing data for each variable of interest None
		(c) Summarise follow-up time (eg, average and total amount) 28 days of follow-up
Outcome data	15*	Report numbers of outcome events or summary measures over time Made in survival analysis
Main results	16	(*a*) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included Unadjusted and adjusted analyses were performed
		(*b*) Report category boundaries when continuous variables were categorized 25ème and 75ème percentiles were provided
		(*c*) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses No other subgroup than the matched population

Discussion		
Key results	18	Summarise key results with reference to study objectives Done in the first paragraph of the discussion section
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias See limitations section
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence Made
Generalisability	21	Discuss the generalisability (external validity) of the study results discussed among limitations
Other information		
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based None

Supplemental table 1a: Ventilator settings, respiratory system mechanics, and results of arterial blood gas measurements recorded on the first three days of mechanical ventilation from the diagnosis of ARDS*

Day from ARDS diagnosis	Day 1		Day 2		Day 3	
	Influenza virus alone		Influenza virus alone		Influenza virus alone	
	Yes	No	Yes	No	Yes	No
(number of patients)	(73)	(499)	(66)	(487)	(65)	(451)
PEEP, cmH_2O, median (IQR)	12 (9-14)	10 (8-12)††	12 (10-14)	10 (8-13)††	12 (10-14)	9 (8-12)††
Driving pressure, cmH_2O median (IQR)	14 (12-16)	15 (12-18)	13 (10-16)	14 (11-17)	13 (10-15)	14 (11-18)
PaO_2/FiO_2, mmHg, median (IQR)	83 (63-115)	90 (68-120)	121 (91-157)	120 (86-160)	137 (102-207)	143 (100-201)
$PaCO_2$, median (IQR)	55 (46-64)	54 (46-65)	50 (45-57)	49 (42-58)	48 (41-53)	46 (40-53)
Arterial PH, median (IQR)	7.27 (7.17-7.35)	7.25 (7.14-7.34)	7.31 (7.22-7.36)	7.28 (7.19-7.37)	7.34 (7.26-7.40)	7.33 (7.24-7.41)

* Using the worst recorded blood gas values and highest values for levels of PEEP, expiratory tidal volume (Vt), plateau pressure and calculated driving pressure.
† Yes vs No, $p < 0.05$; †† Yes vs No, $p < 0.01$
Definition of abbreviation: Vt, tidal volume; PBW, predicted body weight, IQR; interquartile ranges; FiO_2, fraction of inspired oxygen; PaCO2 partial pressure of arterial carbon dioxide; PaO2 partial pressure of arterial oxygen, PEEP positive end-expiratory pressure.

Supplemental online table 2A. Adjusted hazard ratios (HR) for 28-day mortality from the day of ARDS diagnosis

Variables [a]	Adjusted Hazard Ratio (95% CI)	*p* value
Influenza virus alone	0.51 (0.26-0.99)	0.047
Aspiration	0.75 (0.46-1.23)	0.25
Non-pulmonary sepsis	1.60 (1.09-2.43)	0.02
Age (1-year increment)	1.020 (1.009-1.032)	0.0006
SAPS II at admission (1-point increment)	1.020 (1.012-1.028)	<0.0001
Aplasia and/or recent chemotherapy for solid tumor or haematologic disease	1.39 (0.95-2.05)	0.09
Cirrhosis	2.89 (1.88-4.31)	<0.0001
PaO_2/FiO_2 ratio* (1- mmHg increment)	0.994 (0.989-.0.999)	0.02
Driving pressure* (1-point increment)	1.045 (1.035-1.102)	<0.0001
Treatment with vasopressors	1.06 (0.53-2.15)	0.86
Treatment with glucocorticoids	1.67 (120-2.33)	0.72
Renal replacement therapy	2.39 (1.84-3.18)	<0.001

CI, Confident interval; SAPS, Simplified Acute Physiologic Score; MV, Mechanical Ventilation; SOFA, Sequential Organ Failure Assessment

* Worst data recorded between 12 and 24 hours of MV from the diagnosis of ARDS, after optimization of MV

Supplemental table 2B. Unadjusted and adjusted hazard ratios for 90-day mortality from the day of ARDS diagnosis

Variables	Unadjusted Hazard Ratio (95% CI)	*p* Value	Adjusted Hazard Ratio (95% CI)	*p* Value
Influenza virus alone	0.59 (0.38-0.92)	0.02	0.59 (0.35-0.99)	0.048
Influenza virus and co-pathogen	0.79 (0.43-1.56)	0.79		
Non-influenza virus pneumonia	1.17 (0.91-1.51)	0.22		
Aspiration	0.63 (0.43-0.93)	0.02		
Non-pulmonary sepsis	1.93 (1.41-2.64)	<0.01	1.42 (0.98-2.07)	0.06
Miscellaneous	0.98 (0.67-1.44)	0.94		
Age (1-year increment	1.024 (1.015-1.032)	<0.0001	1.018 (1.008-1.029)	0.005
Male gender	1.14 (0.88-1.48)	0.32		
SAPS II at admission (1-point increment)	1.029 (1.022-1.035)	<0.0001	1.017 (1.010-1.024)	<0.0001
Diabetes mellitus	1.13 (0.74-1.78)	0.98		
Valvular and/or coronary disease with treatment	1.20 (0.84-1.72)	0.10		
Aplasia and/or recent chemotherapy for solid tumor or haematologic disease	1.95 (1.47-2.58)	<0.01	1.89 (1.36-2.61)	0.001

Cirrhosis	1.79 (1.23-2.53)	<0.0001	2.96 (1.99-4.41)	<0.0001
COPD	0.68 (0.49-1.13)	0.24		
Obesity	1.07 (0.81-1.43)	0.61		
PaO_2/FiO_2 ratio* (1-mmHg increment)	0.992 (0.988-0.996)	<0.0001	0.996 (0.991-1.000)	0.05
Driving pressure* (1-point increment)	1.057 (1.028-1.078)	<0.0001	1.070 (1.045-1.095)	<0.001
Treatment with vasopressors	3.03 (1.65-5.54)	0.003		
Treatment with glucocorticoids	1.68 (1.28-2.20)	0.002		
Renal replacement therapy	2.08 (1.62-2.67)	<0.0001	1.43 (1.07-1.92)	0.02
Prone positioning	1.02 (0.79-1.32)	0.85		
Extracorporeal membrane oxygenation	1.03 (0.69-1.54)	0.87		

CI, Confident interval; SAPS, Simplified Acute Physiologic Score; MV, Mechanical Ventilation; SOFA, Sequential Organ Failure Assessment; COPD, chronic obstructive pulmonary disease.

* Worst data recorded between 12 and 24 hours of MV from the diagnosis of ARDS, after optimization of MV