

SUPPLEMENTARY MATERIAL

Relationship between the Clinical Frailty Scale and short-term mortality in patients ≥ 80 years old acutely admitted to the ICU – a prospective cohort study

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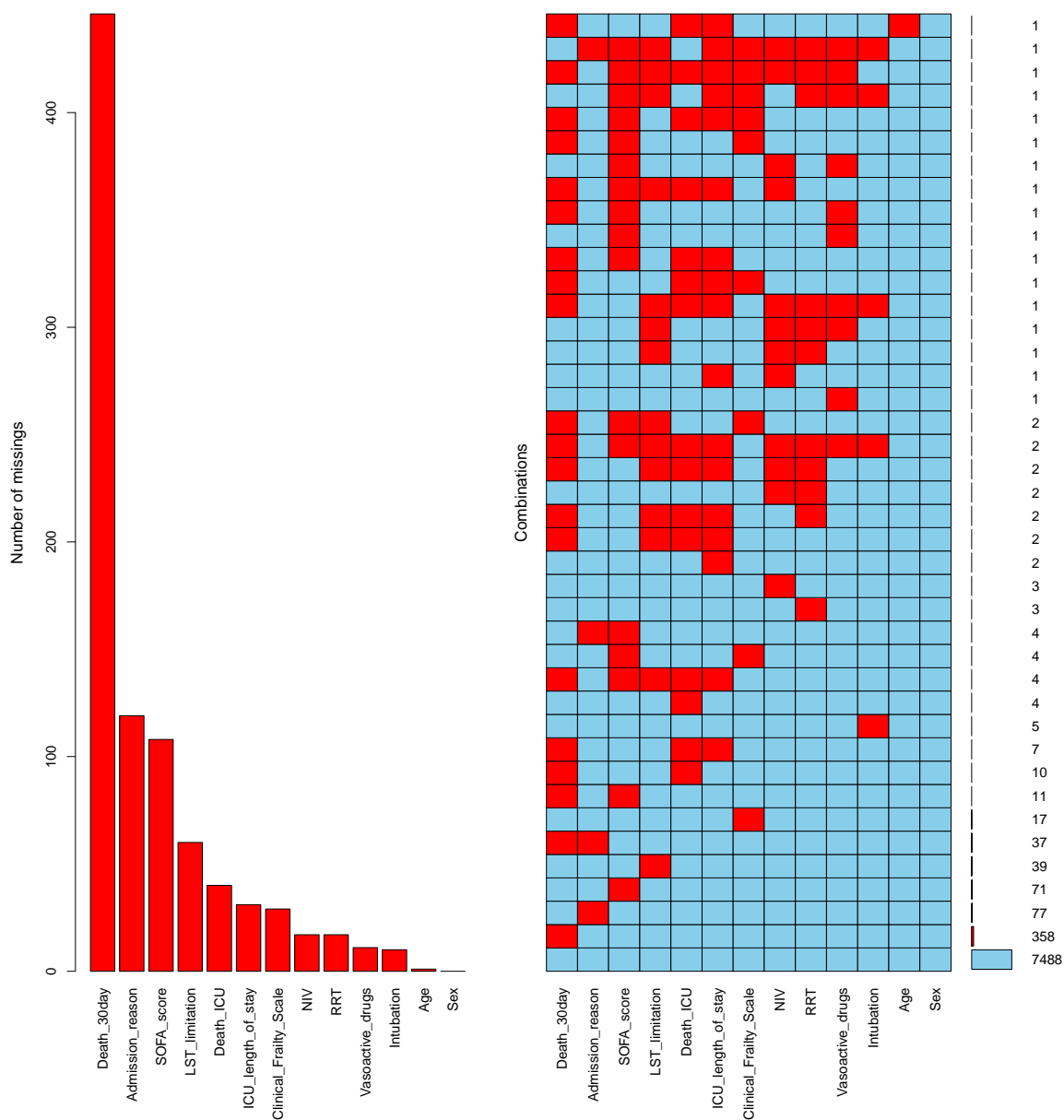
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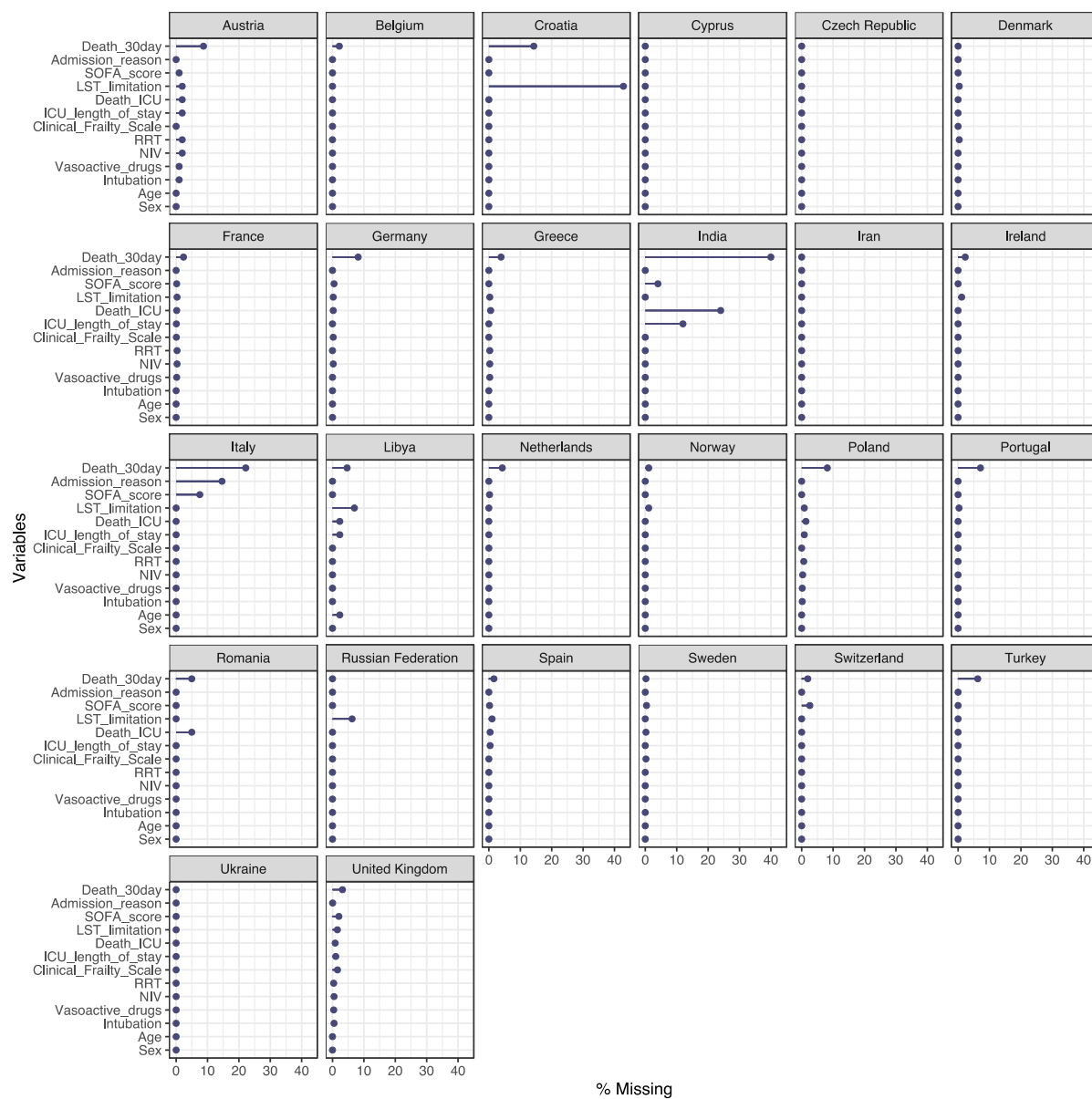
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Supplementary Figure 1. Detailed description of missing variables: entire dataset.

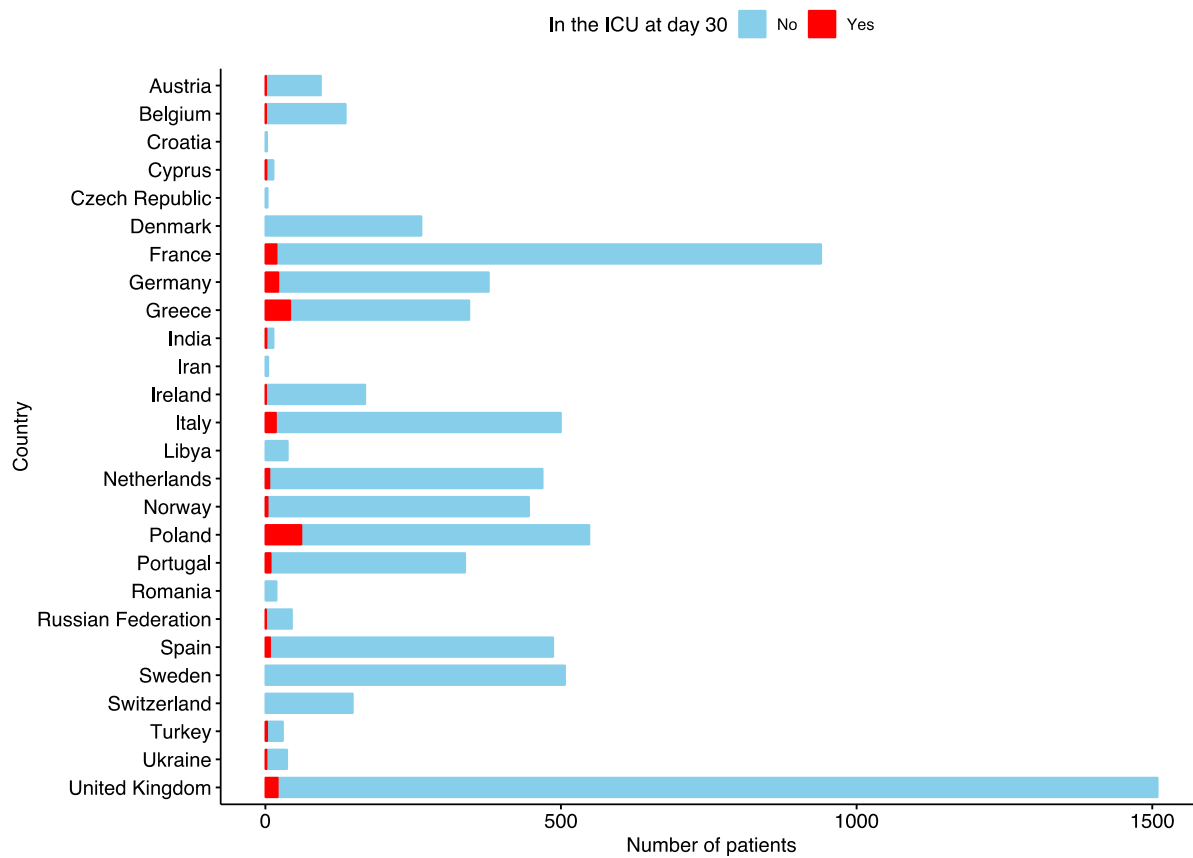


Footnote: Blue – complete observations, red – missing data.

Supplementary Figure 2. Detailed description of missing variables: stratified by country.



Supplementary Figure 3. The number of patients still hospitalised in the ICU within 30 days from admission stratified by country.



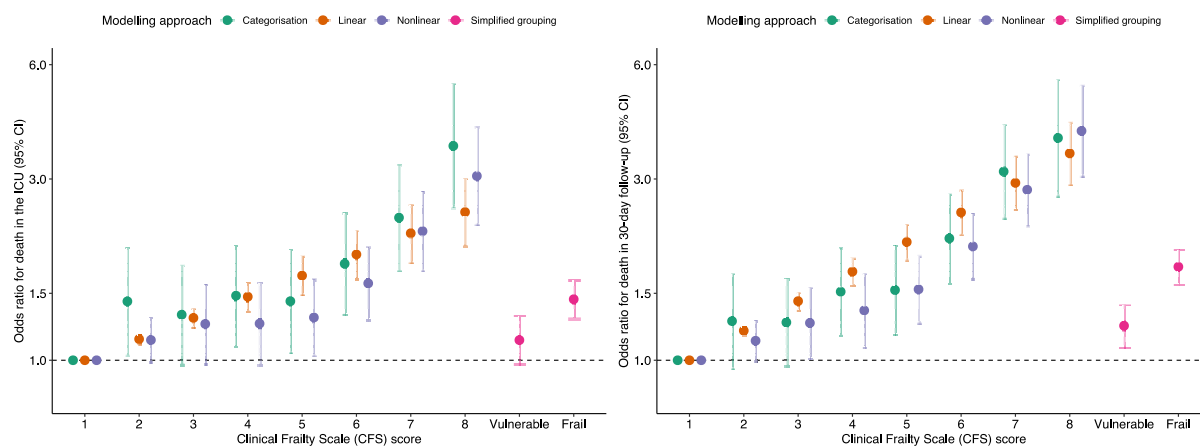
Supplementary Table 1. Characteristics of complete and incomplete observations in terms of survival status within 30 days from admission to the ICU.

	Complete observations	Lost to follow-up
Number of patients	7723	450
Reason for admission (n, %)		
Respiratory failure	1841 (24.1)	97 (23.5)
Circulatory failure	1074 (14.1)	47 (11.4)
Combined respiratory/circulatory failure	893 (11.7)	57 (13.8)
Sepsis	1019 (13.3)	42 (10.2)
Emergency surgery	915 (12.0)	37 (9.0)
Non-traumatic cerebral pathology	487 (6.4)	32 (7.7)
Multiple trauma without head injury	143 (1.9)	11 (2.7)
Multiple trauma with head injury	134 (1.8)	13 (3.1)
Isolated head injury	183 (2.4)	14 (3.4)
Other	952 (12.5)	63 (15.3)
Male sex (n, %)	4060 (52.6)	228 (50.7)
Age, years (median [IQR])	84.00 [81.00, 87.00]	83.00 [81.00, 86.00]
SOFA score (median [IQR])	7.00 [4.00, 10.00]	6.00 [4.00, 9.00]
CFS (median [IQR])	4.00 [3.00, 6.00]	4.00 [3.00, 6.00]
NIV (n, %)	1900 (24.6)	109 (24.6)
Intubation (n, %)	3927 (50.9)	237 (53.0)
Vasoactive drugs (n, %)	4495 (58.2)	202 (45.4)
Renal replacement therapy (n, %)	840 (10.9)	33 (7.5)
Length of stay in the ICU, hours (median [IQR])	76.00 [35.00, 174.00]	72.50 [30.00, 160.50]

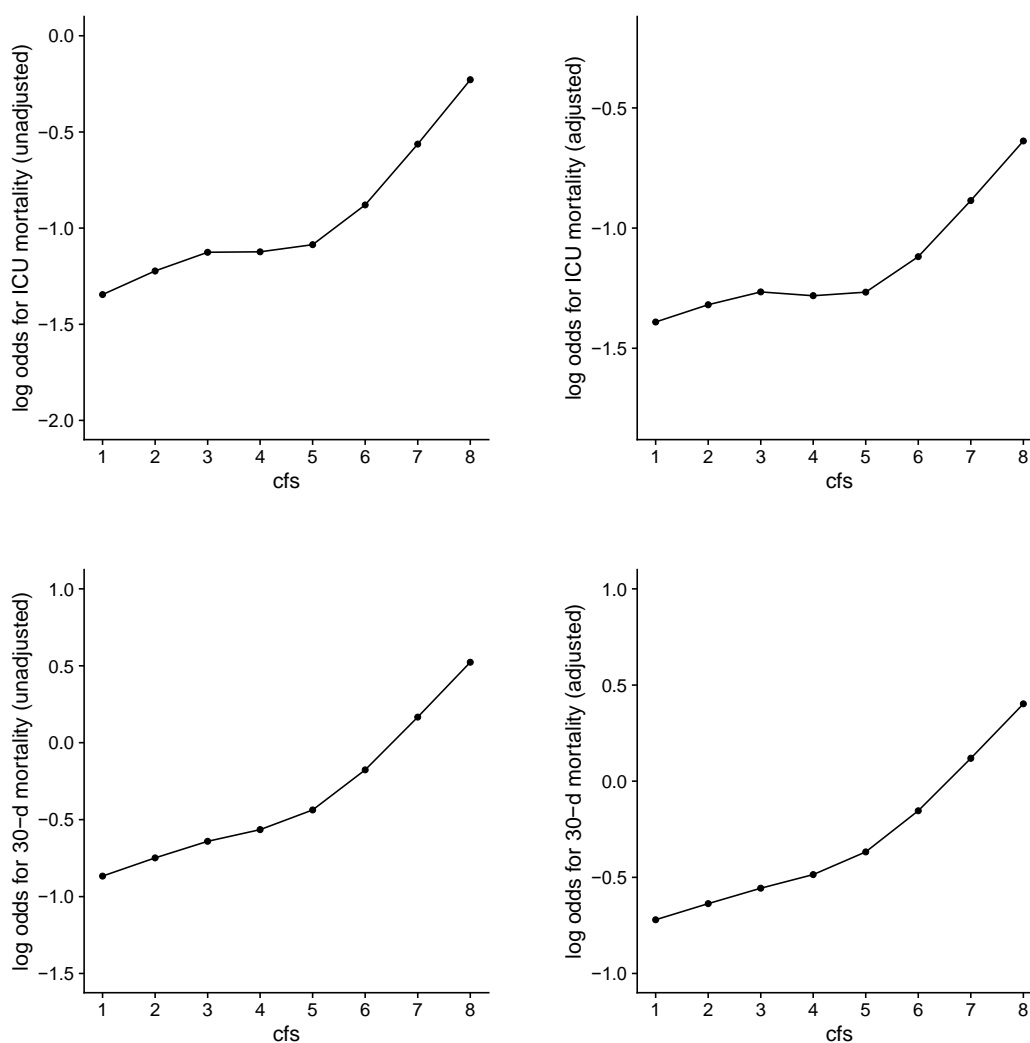
Supplementary Table 2. Characteristics of patients who were discharged from the ICU and patients still hospitalised in the ICU at day 30.

	LOS \leq 30 days	LOS >30 days
Number of patients	7263	224
Reason for admission (n, %)		
Respiratory failure	1744 (24.0)	65 (29.0)
Circulatory failure	1046 (14.4)	11 (4.9)
Combined respiratory/circulatory failure	834 (11.5)	40 (17.9)
Sepsis	958 (13.2)	34 (15.2)
Emergency surgery	882 (12.1)	18 (8.0)
Non-traumatic cerebral pathology	459 (6.3)	18 (8.0)
Multiple trauma without head injury	136 (1.9)	5 (2.2)
Multiple trauma with head injury	117 (1.6)	11 (4.9)
Isolated head injury	175 (2.4)	5 (2.2)
Other	912 (12.6)	17 (7.6)
Male sex (n, %)	3802 (52.3)	132 (58.9)
Age, years (median [IQR])	84.00 [81.00, 87.00]	83.00 [81.00, 85.00]
SOFA score (median [IQR])	7.00 [4.00, 10.00]	9.00 [6.00, 11.00]
CFS (median [IQR])	4.00 [3.00, 6.00]	4.00 [3.00, 6.00]
NIV (n, %)	1798 (24.8)	56 (25.0)
Intubation (n, %)	3595 (49.5)	209 (93.3)
Vasoactive drugs (n, %)	4198 (57.8)	202 (90.2)
Renal replacement therapy (n, %)	753 (10.4)	67 (29.9)

Supplementary Figure 4. The impact of modelling approach on the association between frailty and short-term mortality – univariate logistic regression, 8-point variant of the Clinical Frailty Scale.



Supplementary Figure 5. Relationship between frailty and short-term mortality after admission to the ICU on log odds scale, 8-point variant of the Clinical Frailty Scale.



Supplementary Table 3. Fraction of new prognostic information from including frailty in the model – 9-point variant of the Clinical Frailty Scale.

	Fraction of new information		p-value (likelihood ratio test)	
	ICU mortality model	30-day mortality model	ICU mortality model	30-day mortality model
Categorisation	4%	11%	<0.001	<0.001
Linear	3%	9%	<0.001	<0.001
Nonlinear	4%	10%	<0.001	<0.001
Simplified grouping	1%	6%	<0.001	<0.001
Dichotomisation	1%	5%	<0.001	<0.001

Supplementary Table 4. STROBE checklist

	Item No	Recommendation	Page No
Title and abstract	1	(a) Indicate the study's design with a commonly used term in the title or the abstract (b) Provide in the abstract an informative and balanced summary of what was done and what was found	1-3
Introduction			
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	4-5
Objectives	3	State specific objectives, including any prespecified hypotheses	5
Methods			
Study design	4	Present key elements of study design early in the paper	5
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	5
Participants	6	(a) Give the eligibility criteria, and the sources and methods of selection of participants. Describe methods of follow-up (b) For matched studies, give matching criteria and number of exposed and unexposed	5
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	6-8
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	6-8
Bias	9	Describe any efforts to address potential sources of bias	6-8
Study size	10	Explain how the study size was arrived at	5
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	6-8
Statistical methods	12	(a) Describe all statistical methods, including those used to control for confounding (b) Describe any methods used to examine subgroups and interactions (c) Explain how missing data were addressed (d) If applicable, explain how loss to follow-up was addressed (e) Describe any sensitivity analyses	6-8
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 (b) Give reasons for non-participation at each stage (c) Consider use of a flow diagram	8
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders (b) Indicate number of participants with missing data for each variable of interest (c) Summarise follow-up time (eg, average and total amount)	8-9, T1, SM
Outcome data	15*	Report numbers of outcome events or summary measures over time	8-9, T1, SM

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	8-9, T2, F1-2, SM
		(b) Report category boundaries when continuous variables were categorized	7
		(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	8-9, SM
Discussion			
Key results	18	Summarise key results with reference to study objectives	10
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	12-13
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	13
Generalisability	21	Discuss the generalisability (external validity) of the study results	11-13
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	14

Supplementary Table 5. VIP1 & VIP2 collaborators list

First initials and surnames of VIP1 collaborators
R Schmutz
F Wimmer
P Eller
M Joannidis
P De Buysscher
N De Neve
S Oeyen
W Swinnen
B Bollen Pinto
P Abraham
L Hergafi
JC Schefold
E Biskup
P Piza
I Taliadoros
J Fjølner
N Dey
C Sølling
BS Rasmussen
S Christensen
X Forceville
G Besch
H Mentec
P Michel
P Mateu
P Michel
L Vettoretti
J Bourenne
N Marin
M Guillot
N Aissaoui
C Goulenok
N Thieulot-Rolin
J Messika
L Lamhaut
B Guidet
C Charron
A Lauten
AL Sacher
T Brenner
M Franz
F Bloos
H Ebelt
S J Schaller
K Fuest
C Rabe
T Dieck
S Steiner
T Graf
AM Nia
C Jung
RA Janosi
P Meybohm
P Simon
S Utzolino

T Rahmel
E Barth
C Jung
M Schuster
Z Aidoni
S Aloizos
P Tasioudis
K Lampiri
V Zisopoulou
I Ravani
E Pagaki
A Antoniou
TA Katsoulas
A Kounougeri
G Marinakis
F Tsimpoukas
A Spyropoulou
P Zygozulis
A Kyparissi
M Gupta
M Gurjar
IM Maji
I Hayes
B Marsh
Y Kelly
A Westbrook
G Fitzpatrick
D Maheshwari
C Motherway
G Negri
S Spadaro
G Nattino
M Pedferri
A Boscolo
S Rossi
G Calicchio
L Cubattoli
G Di Lascio
M Barbagallo
F Berruto
D Codazzi
A Bottazzi
P Fumagalli
G Negro
G Lupi
F Savelli
GA. Vulcano
R Fumagalli
A Marudi
U Lefons
R Lembo
M Babini
A Paggioro
V Parrini
M Zaccaria
S Clementi
C Gigliuto
F Facondini

S Pastorini
S Munaron
I Calamai
A Bocchi
A Adorni
MG Bocci
A Cortegiani
T Casalicchio
S Mellea
E Graziani
M Barattini
E Brizio
M Rossi
M Hahn
H Flaatten
N Kemmerer
HF Strietzel
K Dybvik
T Legernaes
P Klepstad
EB Olaussen
KI Olsen
OM Brresen
G Bjorsvik
FH Andersen
S Maini
L Fehrle
M Czuczwar
P Krawczyk
M Ziętkiewicz
ŁR Nowak
K Kotfis
K Cwyl
R Gajdosz
J Biernawska
R Bohatyrewicz
R Gawda
P Grudzień
P Nasiłowski
N Popek
W Cyrankiewicz
K Wawrzyniak
M Wnuk
D Maciejewski
D Studzińska
M Żukowski
S Bernas
M Piechota
W Szczeklik
I Nowak-Kózka
J Fronczek
M Serwa
W Machała
J Stefaniak
M Wujtewicz
P Maciejewski
M Szymkowiak
B Adamik

K Polok
J Górká
N Catorze
MC Branco
N Barros
I Barros
A Krystopchuk
T Honrado
C Sousa
F Munoz
M Rebelo
R Gomes
J Nunes
C Dias
AM Fernandes
C Petrisor
B Constantin
V Belskiy
B Boskholov
E Rodriguez
G Aguilar
G Masdeu
MI Jaimes
AP Mira
MA Bodi
JAB Mendoza
S López-Cuenca
MH Guzman
J Rico-Feijoo
M Ibarz
J Trenado Alvarez
R Kawati
J Sivik
J Nauska
D Smole
F Parenmark
J Lyrén
K Rockstroh
S Rydén
M Spångfors
M Strinnholm
S Walther
L De Geer
P Nordlund
S Pålsson
H Zetterquist
A Nilsson
K Thiringer
M Jungner
B Bark
B Nordling
H Sköld
C Brorsson
S Persson
A Bergström
J Berkius
J Holmström
I van Dijk

LEM. van Lelyveld-Haas
T Jansen
F Nooteboom
PHJ van der Voort
D de Lange
W Dieperink
MC de Waard
AGE de Smet
L Bormans
T Dormans
G Dempsey
SJ Mathew
AS Raj
I Grecu
J Cupitt
T Lawton
R Clark
M Popescu
N Spittle
M Faulkner
A Cowton
P Williams
E Elloway
M Reay
S Chukkambotla
R Kumar
N Al-Subaie
L Kent
T Tamm
I Kajtor
K Burns
R Pugh
M Ostermann
E Kam
H Bowyer
N Smith
M Templeton
J Henning
K Goffin
R Kapoor
S Laha
P Chilton
W Khaliq
A Crayford
S Coetzee
M Tait
W Stoker
M Gimenez
A Pope
J Camsooksai
D Pogson
K Quigley
J Ritzema
A Hormis
C Boulanger
M Balasubramaniam
L Vamplew
K Burt

D Martin
I Greco
J Craig
J Prowle
N Doyle
J Shelton
C Scott
P Donnison
S Shelton
C Frey
C Ryan
D Spray
C Ryan
V Barnes
K Barnes
S Ridgway
R Saha
L Kent
T Clark
J Wood
C Bolger
C Bassford
A Cowton
J Lewandowski
X Zhao
S Humphreys
S Dowling
N Richardson
A Burtenshaw
C Stevenson
D Wilcock
Y Nalapko
First initials and surnames of VIP2 collaborators
M Joannidis
P Eller
R Helbok
R Schmutz
J Nollet
N de Neve
P De Buysscher
S Oeyen
W Swinnen
M Mikačić
A Bastiansen
A Husted
BES Dahle
C Cramer
C Sølling
D Ørsnes
J Edelberg Thomsen
JJ Pedersen
M Hummelose Enevoldsen
T Elkmann
A Kubisz-Pudelko
A Pope
A Collins
AS Raj
C Boulanger

C Frey
C Hart
C Bolger
D Spray
G Randell
H Filipe
ID Welters
I Grecu
J Evans
J Cupitt
J Lord
J Henning
J Jones
J Ball
J North
K Salaunkey
L Ortiz-Ruiz De Gordo
L Bell
M Balasubramaniam
M Vizcaychipi
M Faulkner
M Mupudzi
M Lea-Hagerty
M Reay
M Spivey
N Love
N Spittle
N White
P Williams
P Morgan
P Wakefield
R Savine
R Jacob
R Innes
R Kapoor
S Humphreys
S Rose
S Dowling
S Leaver
T Mane
T Lawton
V Ogbeide
W Khaliq
Y Baird
A Romen
A Galbois
B Guidet
C Vinsonneau
C Charron
D Thevenin
E Guerot
G Besch
G Savary
H Mentec
JL Chagnon
JP Rigaud
JP Quenot
J Castaneray

J Rosman
J Maizel
K Tiercelet
L Vettoretti
MM Hovaere
M Messika
M Djibré
N Rolin
P Burtin
P Garcon
S Nseir
X Valette
C Rabe
E Barth
H Ebel
K Fuest
M Franz
M Horacek
M Schuster
P Meybohm
R Romano Bruno
S Allgäuer
S Dubler
SJ Schaller
S Schering
S Steiner
T Dieck
T Rahmel
T Graf
A Koutsikou
A Vakalos
B Raitsiou
EN Flioni
E Neou
F Tsimpoukas
G Papathanakos
G Marinakis
I Koutsodimitropoulos
K Aikaterini
N Rovina
S Kourelea
T Polychronis
V Zidianakis
V Konstantinia
Z Aidoni
B Marsh
C Motherway
C Read
I Martin-Loeches
A Neville Cracchiolo
A Morigi
I Calamai
S Brusa
A Elhadi
A Tarek
A Khaled
H Ahmed
W Ali Belkhair

AD Cornet
D Gommers
D de Lange
E van Boven
J Haringman
L Haas
L van den Berg
O Hoiting
P de Jager
R T. Gerritsen
T Dormans
W Dieperink
A Breidablik
A Slaggard
AK Rime
B Jannestad
B Sjøbøe
E Rice
FH Andersen
HF Strietzel
JP Jensen
J Langørgen
K Tøien
K Strand
M Hahn
P Klepstad
A Biernacka
A Kluzik
B Kudlinski
D Maciejewski
D Studzińska
H Hymczak
J Stefaniak
J Solek-Pastuszka
J Zorska
K Cwyl
ŁJ Krzych
M Zukowski
M Lipińska-Gediga
M Pietruszko
M Piechota
M Serwa
M Czuczwar
M Ziętkiewicz
N Kozera
P Nasiłowski
P Sendur
P Zatorski
P Galkin
R Gawda
U Kościuczuk
W Cyrankiewicz
W Gola
AF Pinto
AM Fernandes
AR Santos
C Sousa
I Barros

IA Ferreira
JB Blanco
JT Carvalho
J Maia
N Candeias
N Catorze
V Belskiy
A Lores
AP Mira
C Cilloniz
D Perez-Torres
E Maseda
E Rodriguez
E Prol-Silva
G Eixarch
G Gomà
G Aguilar
G Navarro Velasco
M Irazábal Jaimes
M Ibarz Villamayor
N Llamas Fernández
P Jimeno Cubero
S López-Cuenca
T Tomasa
A Sjöqvist
C Brorsson
F Schiöler
H Westberg
J Nauska
J Sivik
J Berkus
K Kleiven Thiringer
L De Geer
S Walther
F Boroli
JC Schefold
L Hergafi
P Eckert
I Yıldız
I Yovenko
Y Nalapko
R Pugh