DACCOVID

Anton Pottegård
Professor, Clinical Pharmacology and Pharmacy, University of Southern Denmark
Head of Research, Hospital Pharmacy Funen, Odense University Hospital

apottegaard@health.sdu.dk
@Pottegard

DACCOVID

Steering committee

Danish Medicines Agency

Danish Health Authority

Statens Serum Institut

Danish Health Data Authority

Danish Patients

Danish Regions

Danish Regions Clinical Quality Program

Danish Faculties of Health Science

DACCOVID

Expert group

Anton Pottegård, University of Southern Denmark
Jesper Hallas, University of Southern Denmark
Kasper Kristensen, University of Southern Denmark
Lars Christian Lund, University of Southern Denmark
Mette Reilev, University of Southern Denmark
Henrik Toft Sørensen, Aarhus University
Reimar W. Thomsen, Aarhus University
Christian Fynbo Christiansen, Aarhus University
Marianne Kragh Thomsen, Aarhus University Hospital
Steffen Christensen, Aarhus University Hospital
Henrik Støvring, Aarhus University Hospital
Henrik Nielsen, Aalborg University Hospital
Marianne Voldstedlund, Statens Serum Institut
Anders Husby, Statens Serum Institut
Nikolai C. Brun, The Danish Medicines Agency
Nanna Borup Johansen, The Danish Medicines Agency

Aim

To provide rapid analyses of questions related to use of medicines in COVID-19 with potential important public health impact

Clinical Epidemiology

Dovepress

open access to scientific and medical research

Open Access Full Text Article

ORIGINAL RESEARCH

Existing Data Sources in Clinical Epidemiology: The Danish COVID-19 Cohort

This article was published in the following Dove Press journal:
Clinical Epidemiology

Anton Pottegård[1]
Kasper Bruun Kristensen[1]
Mette Reilev[1]
Lars Christian Lund[1]
Martin Thomsen Ernst[1]
Jesper Hallas[1,2]
Reimar Wernich Thomsen[3]
Christian Fynbo Christiansen[3]
Henrik Toft Sørensen[3,4]
Nanna Borup Johansen[5]
Henrik Støvring[1,6]
Steffen Christensen[7]
Marianne Kragh Thomsen[8]
Anders Husby[9]
Marianne Voldstedlund[10]
Jesper Kjær[11]

Background: To facilitate research on severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), a prospective cohort of all Danish residents tested for SARS-CoV-2 in Denmark is established.

Data Structure: All Danish residents tested by reverse transcriptase polymerase chain reactions (RT-PCR) for SARS-CoV-2 in Denmark are included. The cohort is identified using the Danish Microbiology Database. Individual-level record linkage between administrative and health-care registries is facilitated by the Danish Civil Registration System. Information on outcomes related to SARS-CoV-2 infection includes hospital admission, intensive care unit admission, mechanical ventilation, and death and is retrieved from the five administrative Danish regions, the Danish National Patient Registry, and the Danish Register of Causes of Death. The Patient Registry further provides a complete hospital contact history of somatic and psychiatric conditions and procedures. Data on all prescriptions filled at community pharmacies are available from the Danish National Prescription Registry. Health-care authorization status is obtained from the Danish Register of Healthcare Professionals. Finally, selected laboratory values are obtained from the Register of Laboratory Results for Research. The cohort is governed

SARS-CoV-2 PCR results

Prescription fills

Hospital admissions

Deaths

Migrations

Labdata; bloodtype

Ethnicity; urban res.; marriage status


Come in we are
Open

Hypothesis submitted

Steering committee approval

Expert group meeting

Protocol development

EU-PAS registration

Programming

Regulator note

Submission

5 preparatory studies

(all published)

Methods review

Description of data sources

Baseline characteristics

NSAID in influenza

ACE/ARB in influenza

5 preparatory studies

(all published)

11 hypothesis evaluating studies

4 being analysed

4 under review

1 accepted

2 published

International Journal of Epidemiology, 2020, 1–14
doi: 10.1093/ije/dyaa140
Original Article

Original Article

Characteristics and predictors of hospitalization and death in the first 11 122 cases with a positive RT-PCR test for SARS-CoV-2 in Denmark: a nationwide cohort

Mette Reilev,[1] Kasper Bruun Kristensen,[1] Anton Pottegård,[1,2] Lars Christian Lund,[1] Jesper Hallas,[1,3] Martin Thomsen Ernst,[1] Christian Fynbo Christiansen,[4] Henrik Toft Sørensen,[4,5] Nanna Borup Johansen,[6] Nikolai Constantin Brun,[6] Marianne Voldstedlund,[7] Henrik Støvring,[1,8] Marianne Kragh Thomsen,[9] Steffen Christensen,[10] Sophie Gubbels,[7] Tyra Grove Krause,[7] Kåre Mølbak,[7]* and Reimar Wernich Thomsen[4]

[1]Clinical Pharmacology and Pharmacy, Department of Public Health, University of Southern Denmark, Odense, Denmark, [2]Hospital Pharmacy Funen, Odense University Hospital, Odense, Denmark, [3]Department of Clinical Biochemistry and Clinical Pharmacology, Odense University Hospital, Odense, Denmark, [4]Department of Clinical Epidemiology, Aarhus University Hospital, Aarhus, Denmark, [5]Center for Population Health and Sciences, Stanford University, Stanford, CA, USA, [6]Department of Medical Evaluation and Biostatistics, Danish Medicines Agency, Copenhagen, Denmark, [7]Statens Serum Institut, Copenhagen, Denmark, [8]Department of Public Health—Biostatistics, Aarhus University, Aarhus, Denmark, [9]Department of Clinical Microbiology, Aarhus University Hospital, Aarhus, Denmark and [10]Department of Anaesthesia and Intensive Care Medicine, Aarhus University Hospital, Aarhus, Denmark

*Corresponding author. Department of Clinical Epidemiology, Aarhus University Hospital, Olof Palmes Alle 43-45, DK-8200

Table 1 Baseline characteristics for the overall Danish SARS-CoV-2 cohort and stratified by whether the infection was community-managed or led to any hospitalization, hospitalization without ICU admission, hospitalization with ICU admission or death

	Danish SARS-CoV-2 cohort		SARS-CoV-2 PCR-positive cases				
					Hospitalized		
Characteristic	SARS-CoV-2 test-negative individuals $n = 410\,697$	SARS-CoV-2 PCR-positive cases $n = 11\,122$ (100%)	Community-managed $n = 8868$ (80%)	Hospitalized $n = 2254$ (20%)	Hospitalized, non-ICU $n = 1940$ (17%)	Hospitalized, ICU $n = 314$ (2.8%)	Fatal disease within 30 days[c] $n = 577$ (5.2%)
Age years, median (IQR)	46 (30–60)	48 (33–62)	44 (30–56)	71 (56–80)	72 (55–81)	68 (58–75)	82 (75–88)
0–9	23 295 (5.7%)	251 (2.3%)	240 (2.7%)	11 (0.5%)	11 (0.6%)	0 (–)	0 (–)
10–19	25 256 (6.1%)	495 (4.5%)	481 (5.4%)	14 (0.6%)	14 (0.7%)	0 (–)	0 (–)
20–29	52 065 (13%)	1523 (14%)	1468 (17%)	55 (2.4%)	49 (2.5%)	6 (1.9%)	0 (–)
30–39	60 638 (15%)	1588 (14%)	1498 (17%)	90 (4.0%)	80 (4.1%)	10 (3.2%)	16 (2.8%)**
40–49	69 424 (17%)	1970 (18%)	1778 (20%)	192 (8.5%)	169 (8.7%)	23 (7.3%)	
50–59	72 603 (18%)	2035 (18%)	1698 (19%)	337 (15%)	285 (15%)	52 (17%)	
60–69	51 445 (13%)	1305 (12%)	931 (10%)	374 (17%)	292 (15%)	82 (26%)	56 (9.7%)
70–79	33 740 (8.2%)	950 (8.5%)	372 (4.2%)	578 (26%)	471 (24%)	107 (34%)	165 (29%)
80–89	17 478 (4.3%)	762 (6.9%)	286 (3.2%)	476 (21%)	442 (23%)	34 (11%)	220 (38%)
90+	4752 (1.2%)	243 (2.2%)	116 (1.3%)	127 (5.6%)	127 (6.5%)	0 (–)	120 (21%)
Sex							
Female	253 610 (62%)	6430 (58%)	5388 (61%)	1042 (46%)	956 (49%)	86 (27%)	249 (43%)
Male	157 087 (38%)	4692 (42%)	3480 (39%)	1212 (54%)	984 (51%)	228 (73%)	328 (57%)
Authorized healthcare workers	54 004 (13%)	2427 (22%)	2294 (26%)	133 (5.9%)	120 (6.2%)	13 (4.1%)	(*n*<5)
Nurse	20 744 (38%)	1229 (51%)	1173 (51%)	56 (42%)	50 (42%)	6 (46%)	0 (–)
Physician	6335 (12%)	398 (16%)	371 (16%)	27 (20%)	–***	(*n* < 5)	(*n* < 5)
Other	26 925 (50%)	800 (33%)	750 (33%)	50 (38%)	–***	(*n* < 5)	(*n* < 5)
Number of co-morbidities[a]							
Median (IQR)	0 (0–1)	0 (0–1)	0 (0–1)	2 (1–3)	2 (1–3)	2 (1–3)	3 (2–4)
0	215 795 (53%)	6034 (54%)	5532 (62%)	502 (22%)	433 (22%)	69 (22%)	30 (5.2%)
1	96 736 (24%)	2462 (22%)	1978 (22%)	484 (21%)	412 (21%)	72 (23%)	92 (16%)
2	45 590 (11%)	1140 (10%)	742 (8.4%)	398 (18%)	328 (17%)	70 (22%)	108 (19%)
3	25 312 (6.2%)	691 (6.2%)	327 (3.7%)	364 (16%)	317 (16%)	47 (15%)	122 (21%)
4+	27 264 (6.6%)	795 (7.1%)	289 (3.3%)	506 (22%)	450 (23%)	56 (18%)	225 (39%)
Hospital admissions within the last year[b]							
Median (IQR)	0 (0–0)	0 (0–0)	0 (0–0)	0 (0–1)	0 (0–1)	0 (0–0)	1 (0–2)
0	348 652 (85%)	9597 (86%)	8124 (92%)	1473 (65%)	1235 (64%)	238 (76%)	270 (47%)
1	38 080 (9.3%)	941 (8.5%)	539 (6.1%)	402 (18%)	357 (18%)	45 (14%)	149 (26%)
2	11 766 (2.9%)	269 (2.4%)	107 (1.2%)	162 (7.2%)	150 (7.7%)	12 (3.8%)	71 (12%)
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Heart failure			9432 (2.3%)		315 (2.8%)		94 (1.1%)

(Continued)

SARS-CoV-2 PCR-positive cases			
	Hospitalized		
Hospitalized	Hospitalized, non-ICU	Hospitalized, ICU	Fatal disease within 30 days[c]
$n = 2254$ (20%)	$n = 1940$ (17%)	$n = 314$ (2.8%)	$n = 577$ (5.2%)
88 (3.9%)	83 (4.3%)	5 (1.6%)	41 (7.1%)
129 (5.7%)	115 (5.9%)	14 (4.5%)	46 (8.0%)
1105 (49%)	939 (48%)	166 (53%)	346 (60%)
727 (32%)	605 (31%)	122 (39%)	198 (34%)
409 (18%)	346 (18%)	63 (20%)	105 (18%)
493 (22%)	419 (22%)	74 (24%)	183 (32%)
187 (8.3%)	165 (8.5%)	22 (7.0%)	51 (8.8%)
402 (18%)	355 (18%)	47 (15%)	195 (34%)
367 (16%)	307 (16%)	60 (19%)	110 (19%)
301 (13%)	254 (13%)	47 (15%)	89 (15%)
162 (7.2%)	140 (7.2%)	22 (7.0%)	58 (10%)
66 (2.9%)	53 (2.7%)	13 (4.1%)	21 (3.6%)
490 (22%)	417 (21%)	73 (23%)	198 (34%)
343 (15%)	311 (16%)	32 (10%)	163 (28%)
414 (18%)	376 (19%)	38 (12%)	208 (36%)
258 (11%)	231 (12%)	27 (8.6%)	115 (20%)
115 (5.1%)	102 (5.3%)	13 (4.1%)	68 (12%)
392 (17%)	346 (18%)	46 (15%)	167 (29%)
193 (8.6%)	170 (8.8%)	23 (7.3%)	78 (14%)
307 (14%)	272 (14%)	35 (11%)	89 (15%)
31 (1.4%)	–***	(*n* < 5)	(*n* < 5)
661 (29%)	550 (28%)	111 (35%)	191 (33%)
270 (12%)	220 (11%)	50 (16%)	54 (9.4%)
17 (0.8%)	–***	(*n* < 5)	6 (1.0%)
13 (0.6%)	–***	(*n* < 5)	(*n* < 5)
494 (22%)	433 (22%)	61 (19%)	153 (27%)
1231 (55%)	1054 (54%)	177 (56%)	413 (72%)
435 (19%)	377 (19%)	58 (18%)	156 (27%)
221 (9.8%)	206 (11%)	15 (4.8%)	101 (18%)

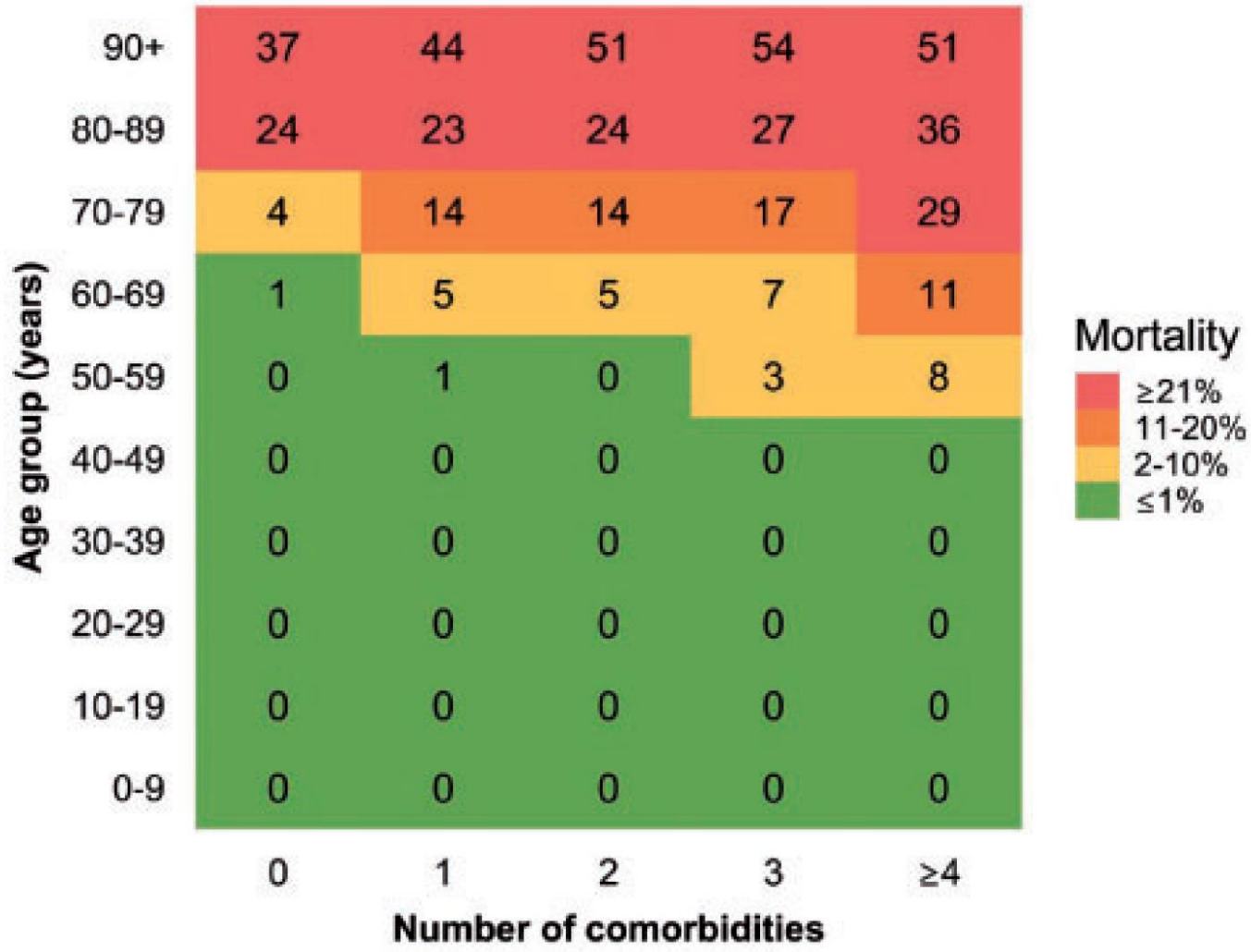
(Continued)

SARS-CoV-2 PCR-positive cases				
		Hospitalized		
nmunity-anaged	Hospitalized	Hospitalized, non-ICU	Hospitalized, ICU	Fatal disease within 30 days[c]
868 (80%)	$n = 2254$ (20%)	$n = 1940$ (17%)	$n = 314$ (2.8%)	$n = 577$ (5.2%)
) (2.8%)	354 (16%)	321 (17%)	33 (11%)	170 (29%)
) (2.7%)	299 (13%)	269 (14%)	30 (9.6%)	137 (24%)
) (5.0%)	436 (19%)	364 (19%)	72 (23%)	144 (25%)
) (1.9%)	139 (6.2%)	139 (7.2%)	0 (-)	117 (20%)
) (4.6%)	374 (17%)	317 (16%)	57 (18%)	137 (24%)
(1.0%)	65 (2.9%)	54 (2.8%)	11 (3.5%)	15 (2.6%)
) (1.1%)	194 (8.6%)	172 (8.9%)	22 (7.0%)	80 (14%)
) (2.1%)	114 (5.1%)	99 (5.1%)	15 (4.8%)	37 (6.4%)
) (1.4%)	57 (2.5%)	–***	(*n* < 5)	21 (3.6%)
(0.5%)	33 (1.5%)	27 (1.4%)	6 (1.9%)	13 (2.3%)
(0.2%)	23 (1.0%)	–***	(*n* < 5)	7 (1.2%)
) (7.5%)	277 (12%)	239 (12%)	38 (12%)	57 (9.9%)
) (2.3%)	145 (6.4%)	127 (6.5%)	18 (5.7%)	50 (8.7%)

lefined by hospital-discharge diagnoses in combination with drug use for the co-morbidity (i.e. filled pre-
pplementary data at *IJE* online.

*** To ensure anonymity, Danish law prohibits reporting of exact *n*= measures (–) in some cases where this could lead to inferring of low *n* results (*n* < 5) in other categories.

ICU, intensive care unit; IQR, interquartile range; SARS-CoV-2, severe acute respiratory syndrome coronavirus 2; ACE, angiotensin-converting enzyme inhibitor; ARB, angiotensin receptor blocker; NSAID, non-steroidal anti-inflammatory drugs.


90+ 37 44 51 54 51
80-89 24 23 24 27 36
70-79 4 14 14 17 29
60-69 1 5 5 7 11
50-59 0 1 0 3 8
40-49 0 0 0 0 0
30-39 0 0 0 0 0
20-29 0 0 0 0 0
10-19 0 0 0 0 0
0-9 0 0 0 0 0
Age group (years)
0 1 2 3 ≥4
Number of comorbidities
Mortality
≥21%
11-20%
2-10%
≤1%

ABO bloodtype

NSAIDs

ACE/ARB

VTE risk

Inhaled steroids

Immunosuppr.

PPIs

Antidiabetics

Thyroid function

Psychotropics

Complications

PLOS MEDICINE

RESEARCH ARTICLE

Adverse outcomes and mortality in users of non-steroidal anti-inflammatory drugs who tested positive for SARS-CoV-2: A Danish nationwide cohort study

Lars Christian Lund[1☯], Kasper Bruun Kristensen[1☯], Mette Reilev[1], Steffen Christensen[2], Reimar Wernich Thomsen[3], Christian Fynbo Christiansen[3], Henrik Støvring[1,4], Nanna Borup Johansen[5], Nikolai Constantin Brun[5], Jesper Hallas[1], Anton Pottegård[1]*

1 Clinical Pharmacology and Pharmacy, Department of Public Health, University of Southern Denmark, Odense, Denmark, **2** Department of Anaesthesia and Intensive Care Medicine, Aarhus University Hospital, Aarhus, Denmark, **3** Department of Clinical Epidemiology, Aarhus University Hospital, Aarhus, Denmark, **4** Biostatistics, Department of Public Health, Aarhus University, Aarhus, Denmark, **5** Department of Medical Evaluation and Biostatistics, Danish Medicines Agency, Copenhagen, Denmark

☯ These authors contributed equally to this work.
* apottegaard@health.sdu.dk

OPEN ACCESS

Citation: Lund LC, Kristensen KB, Reilev M, Christensen S, Thomsen RW, Christiansen CF, et al. (2020) Adverse outcomes and mortality in users of non-steroidal anti-inflammatory drugs who tested positive for SARS-CoV-2: A Danish nationwide cohort study. PLoS Med 17(9): e1003308. https://doi.org/10.1371/journal.pmed.1003308

Academic Editor: Anne C. Cunningham, BRUNEI DARUSSALAM

Abstract

Background

Concerns over the safety of non-steroidal anti-inflammatory drug (NSAID) use during severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection have been raised. We studied whether use of NSAIDs was associated with adverse outcomes and mortality during SARS-CoV-2 infection.

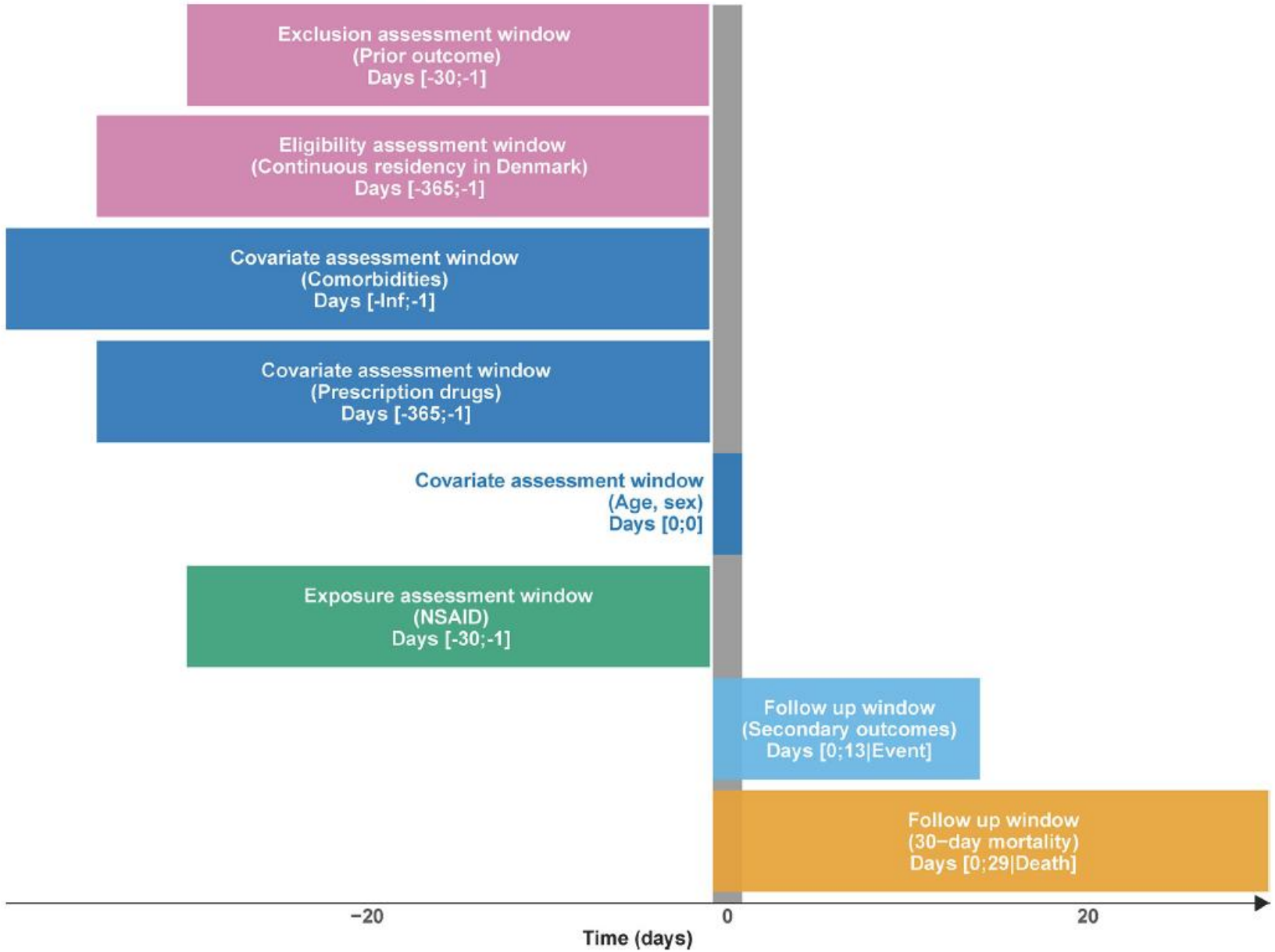

Exclusion assessment window
(Prior outcome)
Days [-30;-1]
Eligibility assessment window
(Continuous residency in Denmark)
Days [-365;-1]
Covariate assessment window
(Comorbidities)
Days [-Inf;-1]
Covariate assessment window
(Prescription drugs)
Days [-365;-1]
Covariate assessment window
(Age, sex)
Days [0;0]
Exposure assessment window
(NSAID)
Days [-30;-1]
Follow up window
(Secondary outcomes)
Days [0;13|Event]
Follow up window
(30−day mortality)
Days [0;29|Death]
−20
0
20
Time (days)

Table 2. Association between current NSAID use and 30-day mortality, hospitalization, ICU admission, mechanical ventilation, and renal replacement therapy in unmatched and propensity-score-matched cohorts.

Outcome	NSAID users		Non-users		Comparison			
	Number of events/ sample size	Risk (%) (95% CI)	Number of events/ sample size	Risk (%) (95% CI)	Risk difference (%) (95% CI)	*p*-Value	Risk ratio (95% CI)	*p*-Value
Unmatched cohort								
Death	14/248	5.6 (2.8, 8.5)	521/8,988	5.8 (5.3, 6.3)	−0.2 (−3.1, 2.8)	0.92	0.97 (0.58, 1.63)	0.92
Hospitalization*	56/228	24.6 (19.0, 30.2)	1,456/8,414	17.3 (16.5, 18.1)	7.3 (1.6, 12.9)	0.01	1.42 (1.13, 1.79)	<0.01
ICU admission*	11/247	4.5 (1.9, 7.0)	279/8,956	3.1 (2.8, 3.5)	1.3 (−1.3, 3.9)	0.31	1.43 (0.79, 2.58)	0.23
Mechanical ventilation*	10/248	4.0 (1.6, 6.5)	225/8,970	2.5 (2.2, 2.8)	1.5 (−0.9, 4.0)	0.23	1.61 (0.86, 2.99)	0.13
Renal replacement therapy*	$n < 5$/248	—**	—**	—**	0.6 (−0.8, 1.9)	0.42	1.87 (0.59, 5.94)	0.29
Matched cohort								
Death	14/224	6.3 (3.1, 9.4)	55/896	6.1 (4.4, 7.8)	0.1 (−3.5, 3.7)	0.95	1.02 (0.57, 1.82)	0.95
Hospitalization*	50/204	24.5 (18.6, 30.4)	175/826	21.2 (18.1, 24.3)	3.3 (−3.4, 10.0)	0.33	1.16 (0.87, 1.53)	0.31
ICU admission*	11/223	4.9 (2.1, 7.8)	42/889	4.7 (3.2, 6.2)	0.2 (−3.0, 3.4)	0.90	1.04 (0.54, 2.02)	0.90
Mechanical ventilation*	10/224	4.5 (1.8, 7.2)	35/891	3.9 (2.5, 5.3)	0.5 (−2.5, 3.6)	0.73	1.14 (0.56, 2.30)	0.72
Renal replacement therapy*	$n < 5$/224	—**	—**	—**	−0.2 (−2.0, 1.6)	0.81	0.86 (0.24, 3.09)	0.81

Outcome	Risk ratio (95% CI)
Death	1.02 (0.57-1.82)
Hospitalization	1.16 (0.87-1.53)
ICU admission	1.04 (0.54-2.02)
Mechanical ventilation	1.14 (0.56-2.30)
Renal replacement therapy	0.86 (0.24-3.09)

Conclusions

Use of NSAIDs was not associated with an increased risk of 30-day mortality or adverse outcomes in patients infected with SARS-CoV-2.

Received: 14 April 2020 | Revised: 28 April 2020 | Accepted: 2 May 2020
DOI: 10.1002/pds.5029

WILEY

REVIEW

Considerations for pharmacoepidemiological analyses in the SARS-CoV-2 pandemic

Anton Pottegård[1] | Xavier Kurz[2] | Nicholas Moore[3] | Christian F. Christiansen[4] | Olaf Klungel[1,5]

[1]Clinical Pharmacology and Pharmacy, Department of Public Health, University of Southern Denmark, Odense, Denmark

[2]Data Analytics and Methods Task Force, European Medicines Agency, Amsterdam, The Netherlands

[3]Bordeaux PharmacoEpi, University of Bordeaux, Bordeaux, France

[4]Department of Clinical Epidemiology, Aarhus University Hospital, Aarhus, Denmark

[5]Division of Pharmacoepidemiology & Clinical Pharmacology, Utrecht Institute for Pharmaceutical Sciences (UIPS), Utrecht University, Utrecht, The Netherlands

Correspondence
Anton Pottegård, Clinical Pharmacology and Pharmacy, University of Southern Denmark, JB Winsløwsvej 19, 2, DK-5000 Odense C, Denmark.
Email: apottegaard@health.sdu.dk

Abstract

The coronavirus disease 2019 (COVID-19) pandemic has triggered several hypotheses regarding use of specific medicines and risk of infection as well as prognosis. Under these unique circumstances, rapid answers require quick engagement in data collection and analyses; however, appropriate design and conduct of pharmacoepidemiologic studies are needed to generate valid and reliable evidence. In this paper, endorsed by the International Society for Pharmacoepidemiology, we provide methodological considerations for the conduct of pharmacoepidemiological studies in relation to the pandemic across eight domains: (1) timeliness of evidence, including the need to prioritise some questions over others in the acute phase of the pandemic; (2) the need to align observational and interventional research on efficacy; (3) the specific challenges related to "real-time epidemiology" during an ongoing pandemic; (4) what design to use to answer a specific question; (5) considerations on the definition of exposures; (6) what covariates to collect; (7) considerations on the definition of out-

Project	Main responsible entity	Reference
ABO Bloodtype	Odense University Hospital (Torben Barrington)	LINK
NSAID in COVID19	University of Southern Denmark (Anton Pottegård)	LINK
Methods review (ISPE)	International Society for Pharmacoepidemiology (Anton Pottegård)	LINK
Description of DACCOVID	Expert group (Anton Pottegård)	LINK
Baseline paper	Expert group (Reimar W. Thomsen)	LINK
NSAID in influenza	University of Southern Denmark (Anton Pottegård)	LINK
ACE/ARB in influenza	Aarhus University (Christian Fynbo Christiansen)	LINK

THANK YOU!

Jesper Hallas, University of Southern Denmark
Kasper Kristensen, University of Southern Denmark
Lars Christian Lund, University of Southern Denmark
Mette Reilev, University of Southern Denmark
Henrik Toft Sørensen, Aarhus University
Reimar W. Thomsen, Aarhus University
Christian Fynbo Christiansen, Aarhus University
Marianne Kragh Thomsen, Aarhus University Hospital
Steffen Christensen, Aarhus University Hospital
Henrik Støvring, Aarhus University Hospital
Henrik Nielsen, Aalborg University Hospital
Marianne Voldstedlund, Statens Serum Institut
Anders Husby, Statens Serum Institut
Nikolai C. Brun, The Danish Medicines Agency
Nanna Borup Johansen, The Danish Medicines Agency


1
3
1
2
3

Anton Pottegård
apottegaard@health.sdu.dk
www.antonpottegaard.dk
@Pottegard