Dynamic CO-CIN report to SAGE and NERVTAG

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Executive summary

The COVID-19 Clinical Information Network (CO-CIN) collated clinical information from the usual health care records of people of all ages admitted to hospital in the UK.

Up to 10th March people with positive swabs were admitted to hospital as part of the containment strategy. Since 10th March, admission is mostly based upon need for treatment of COVID-19 disease. The great majority of cases in the community do not require hospital admission.

In total up until 27 May 2020, CO-CIN has recruited 48101 patients with confirmed Coronavirus (Figure 1).

The CO-CIN dataset represents 18% (48101/267,240) of cases of confirmed Coronovirus cases in the UK, per the PHE daily reports (last updated 9am on 27 May).

Patient data is collected and uploaded from start of admission, however a complete patient data set is not available until the episode of care is complete. This causes a predictable lag in available data influenced by the duration of admission which is greatest for the sickest patients.

The geographical location of our patients can be seen in Figure 2, of these 958 had travelled abroad recently, and 6749 reported visiting or working in a hospital where COVID-19 cases are being managed.

The median age is 73 (range: 0-1090.3917808), Male/Female 24018/17468.

The most common symptoms were cough (65%), fever (64%) and shortness of breath (63%) (Figure 3A). 1767/37921 (5%) of patients have reported no symptoms. Comorbidity can be seen in Figure 3B. The most common comorbidities were chronic cardiac disease (30%), chronic pulmonary disease (17%) and diabetes without complications (17%). 18285/48101 (38%) of patients have reported no co morbidity. 240/3325 (7%) of women were recorded as being pregnant.

For patients not already in hospital, the median time from onset of symptoms to presentation at hospital was 4 days (range: 0 - 368894 days).

The median length of hospital stay was 8 days (interquartile range: 4-15, n = 31349). 4537/29501 (15%) patients required high-flow oxygen after day 1 of treatment.

Currently 11586 patient(s) have died and 5702 required ICU. 19476 have been discharged home.

Interpretation: The dataset is increasingly more representative of the burden of disease requiring hospitalisation and captures the early exponential rise of disease incidence that is now increasingly driven by domestic transmission events in the community.

Furthermore, we can now see 'hot spots' of disease incidence that largely reflect areas of high population density (most notably London) with a few exceptions to this. There are more men than women, consistent with reports from other countries. The proportion of pregnant women affected is broadly in line with the proportion of pregnant women in the general population.

The commonest comorbidity is chronic cardiac disease, reflecting patterns seen in other countries, although nearly a quarter of patients admitted do not have underlying comorbid disease.

Patients documented as being admitted to ICU are mainly 50-75 years old. When interpreting admission to ICU it is important to remember that we are currently unable to capture treatment limiting decisions regarding level of care.

Prof Calum Semple, Professor in Child Health and Outbreak Medicine, University of Liverpool.

Dr Annemarie Docherty, Academic Consultant Intensive Care University of Edinburgh.

Dr Chris Green, Academic Consultant Infectious Disease University of Birmingham.

Prof Ewen Harrison, Director Centre for Medical Informatics, Usher Institute, University of Edinburgh (analysis).

Professor Tom Solomon, Director HPRU Emerging and Zoonotic Infection.

ISARIC Investigators (Prof. Peter Horby, Prof. Peter Openshaw, Dr Gail Carson, and Dr Kenneth Baillie).

Analytics: Lisa Norman, Riinu Pius, Thomas Drake, Cameron Fairfield, Stephen Knight, Kenneth McLean, Katie Shaw.

Admission

Figure 1



Number with symptom onset occuring after admission to hospital Figure 1B







Patients with outcome stratified by age, and sex Figure 1E





Location by CCG / Healthboard

Figure 2

Click and drag on map to zoom into area. Reset via toolbar at top of map.





Symptoms and comorbidity

Figure 3A

Symptoms on presentation to hospital (% patients, n = 37644) Comorbidity (% patients, n = 37748) Figure 3B



Figure 3C

Correlation of symtpoms in all pages. Note clusters, top right to bottom left, flu-like, coryzal, abdominal, respiratory, neurocutaneous.



Symptoms (diagnostic criteria)

Figure 4A

n = 37644



Symptoms (most common)

Figure 4B n = 37644



Comorbidity (most common)

Figure 4C



Medication prior to illness

Figure 5

Preadmission treatment

Figure 5

Pre-admission treatment

Anti-infectives for illness episode (left) immunosuppressants including oral (not



Patient flow

Figure 6A - All patients

N = 39000



Figure 6B - Patients admitted >=14 days and <=28 days ago

N = 2589



Oxygen requirement

Figure 7A - All patients

N = 36331



Figure 7B - Patients admitted >=14 days and <=28 days ago



Admission location HDU/ITU after day 1 Treatment Outcome

In-hospital medical treatment

Figure 8



Treatment

Figure 9



Status in patients admitted >=14 days from today

Figure 10



Invasive ventilation: status in patients admitted >=14 days ago Figure 11c



Length of stay stratified by age

Figure 11

Length of stay stratified by age and mortality Proportion who reach outcome by day 14 shown



Predictors of death: logistic regression multivariable model

Logistic regression model only includes patients admitted >14 days ago from today.

Dependent: death		No	Yes	OR (univariable)	OR (multivariable)
Age on admission (years)	<50	4166 (94.1)	263 (5.9)	•	•
	50-69	7049 (77.5)	2049 (22.5)	4.60 (4.03-5.28, p<0.001)	4.36 (3.75-5.10, p<0.001)
	70-79	4267 (58.6)	3018 (41.4)	11.20 (9.83-12.82, p<0.001)	9.32 (8.00-10.91, p<0.001)
	80+	5475 (48.4)	5827 (51.6)	16.86 (14.83-19.24, p<0.001)	13.84 (11.89-16.19, p<0.001)
Sex at Birth	Male	11920 (63.0)	7005 (37.0)	•	•
	Female	9363 (68.5)	4310 (31.5)	0.78 (0.75-0.82, p<0.001)	0.70 (0.66-0.74, p<0.001)

Dependent: death		No	Yes	OR (univariable)	OR (multivariable)
	Not specified	0 (NaN)	0 (NaN)	•	•
Chronic cardiac disease	NO	14670 (71.2)	5936 (28.8)	•	•
	YES	5170 (53.6)	4471 (46.4)	2.14 (2.03-2.25, p<0.001)	1.22 (1.15-1.30, p<0.001)
Chronic pulmonary disease	NO	16899 (68.1)	7898 (31.9)	•	•
	YES	2906 (54.3)	2442 (45.7)	1.80 (1.69-1.91, p<0.001)	1.29 (1.20-1.39, p<0.001)
Chronic neurological disorder	NO	17573 (66.9)	8685 (33.1)	•	•
	YES	2041 (57.1)	1533 (42.9)	1.52 (1.42-1.63, p<0.001)	1.22 (1.11-1.33, p<0.001)
Chronic hematologic disease	NO	18839 (66.3)	9595 (33.7)	•	•
	YES	719 (55.9)	567 (44.1)	1.55 (1.38-1.73, p<0.001)	1.24 (1.08-1.42, p=0.002)
Chronic kidney disease	NO	17059 (68.6)	7801 (31.4)	•	•
	YES	2647 (51.6)	2487 (48.4)	2.05 (1.93-2.18, p<0.001)	1.31 (1.22-1.41, p<0.001)
Dementia	NO	17425 (69.2)	7768 (30.8)	•	•
	YES	2224 (47.0)	2503 (53.0)	2.52 (2.37-2.69, p<0.001)	1.46 (1.35-1.57, p<0.001)
Obesity	NO	15949 (65.8)	8274 (34.2)	•	•
	YES	2140 (69.5)	937 (30.5)	0.84 (0.78-0.92, p<0.001)	1.35 (1.23-1.49, p<0.001)
Malignancy	NO	17989 (67.2)	8761 (32.8)	•	•
	YES	1595 (53.0)	1414 (47.0)	1.82 (1.69-1.96, p<0.001)	1.36 (1.24-1.49, p<0.001)

Number in dataframe = 39116, Number in model = 25650, Missing = 13466, AIC = 28699.3, C-statistic = 0.728, H&L = Chi-sq(8) 73.96 (p<0.001)

Figure 12 - Adjusted odds ratio plot

Death				
Age on admission (years)	<50	-	. i	
	50-69	4.36 (3.75-5.10, p<0.001)		H B -1
	70-79	9.32 (8.00-10.91, p<0.001)		⊢ ∎1
	80+	13.84 (11.89-16.19, p<0.001)		⊢∎ -1
Sex at Birth	Male	-	, in the second se	
	Female	0.70 (0.66-0.74, p<0.001)	•	
N	ot specified	-	•	
Chronic cardiac disease	YES	1.22 (1.15-1.30, p<0.001)	i H	-
Chronic pulmonary disease	YES	1.29 (1.20-1.39, p<0.001)	İ	H 1
Chronic neurological disorder	YES	1.22 (1.11-1.33, p<0.001)	Н	-
Chronic hematologic disease	YES	1.24 (1.08-1.42, p=0.002)	ļ	₽ 1
Chronic kidney disease	YES	1.31 (1.22-1.41, p<0.001)		⊢ ∎-1
Dementia	YES	1.46 (1.35-1.57, p<0.001)	i	H a rt
Obesity	YES	1.35 (1.23-1.49, p<0.001)		⊢∎ ⊣
Malignancy	YES	1.36 (1.24-1.49, p<0.001)		HE-I
			1	2 5 10 Odds ratio (95% Cl, log scale)

Figure 13 - ROC



Survival models

Kaplan-Meier plots for survival from symptom onset stratified by age (left) and sex (right)

Figure 14

P-value is log-rank test.



Cox proportional hazards model

The methodology for this is now up and running, but models are still being explored. What is presented here is not a final model, but to demonstrate methodology. The results are correct, but important variables have not yet been included.

Time from symptom onset.

Dependent: Surv(time, status)		all	HR (univariable)	HR (multivariable)
Age on admission (years)	<50	5369 (13.8)	•	•
	50-69	11109 (28.6)	4.07 (3.58-4.63, p<0.001)	4.09 (3.47-4.81, p<0.001)
	70-79	8772 (22.6)	8.71 (7.68-9.89, p<0.001)	8.19 (6.97-9.62, p<0.001)
	80+	13613 (35.0)	12.16 (10.75-13.77, p<0.001)	11.11 (9.46-13.04, p<0.001)
Sex at Birth	Male	22889 (58.0)	•	•
	Female	16542 (42.0)	0.84 (0.81-0.87, p<0.001)	0.80 (0.76-0.84, p<0.001)
qSOFA score on admission	0	12469 <mark>(</mark> 40.5)	•	•
	1	14378 (46.7)	1.54 (1.47-1.61, p<0.001)	1.67 (1.58-1.76, p<0.001)

Dependent: Surv(time, status)		all		HR (univariable)	HR (multivariable)
	2	3559 (11.5)		3.01 (2.84-3.20, p<0.001)	2.80 (2.62-3.00, p<0.001)
	3	408 (1.3)		4.76 (4.19-5.41, p<0.001)	4.13 (3.57-4.77, p<0.001)
Symptomatic at presentation	No symptoms	1027 (2.7)	•		•
	Symptoms	36537 (97.3)		1.10 (0.98-1.25, p=0.116)	•
Chronic cardiac disease	NO	24259 (68.1)	•		•
	YES	11351 (31.9)		1.86 (1.79-1.93, p<0.001)	1.16 (1.11-1.22, p<0.001)
Chronic kidney disease	NO	29293 (83.0)	•		•
	YES	5995 (17.0)		1.79 (1.71-1.87, p<0.001)	1.25 (1.18-1.33, p<0.001)
Moderate/severe liver disease	NO	34278 (98.1)	•		•
	YES	648 (1.9)		1.36 (1.20-1.55, p<0.001)	1.57 (1.34-1.85, p<0.001)
Chronic neurological disorder	NO	30780 (87.8)	•		•
	YES	4278 (12.2)		1.43 (1.35-1.51, p<0.001)	•
Malignancy	NO	31463 (90.0)	•		•
	YES	3505 (10.0)		1.60 (1.51-1.69, p<0.001)	1.27 (1.19-1.36, p<0.001)
Chronic hematologic disease	NO	33438 (95.8)	٠		•
	YES	1474 (4.2)		1.43 (1.32-1.56, p<0.001)	•
Obesity	NO	28495 (88.8)	•		•
	YES	3595 (11.2)		0.86 (0.80-0.92, p<0.001)	1.16 (1.07-1.25, p<0.001)
Diabetes without complications	NO	28282 (81.3)	٠		•
	YES	6484 (18.7)		1.25 (1.19-1.31, p<0.001)	•
Rheumatologic disorder	NO	31150 (89.4)	٠		•
	YES	3676 (10.6)		1.22 (1.15-1.29, p<0.001)	•
Dementia	NO	29617 (84.2)	•		•
	YES	5561 (15.8)		2.18 (2.08-2.28, p<0.001)	1.22 (1.15-1.30, p<0.001)
Malnutrition	NO	32329 (97.4)	•		•
	YES	848 (2.6)		1.49 (1.34-1.67, p<0.001)	•
smoking_mhyn_2levels	NO	23448 (92.8)	•		•
	YES	1812 (7.2)		0.87 (0.79-0.96, p=0.006)	•

Number in dataframe = 39723, Number in model = 25009, Missing = 14714, Number of events = 7308, Concordance = 0.725 (SE = 0.003), R-squared = 0.166(Max possible = 0.997), Likelihood ratio test = 4542.752 (df = 13, p = 0.000)

Figure 15a - Multivariable Cox proportional hazards model



Figure 15b - Multivariable Cox proportional hazards model (age, sex, comorbidities only)



Hazard ratio (95% CI, log scale)

ROC = 0.7247597





Figure 17 - Prognostic model predictions



Figure 18 - Death by severity (NEWS) on admission

Number of deaths by NEWS score at admission



Figure 19 - Death by severity (NEWS) on admission stratified by age

Number of deaths by NEWS score at admission Stratified by age



Figure 20 - Death by severity (qSOFA) on admission stratified by age

Number of deaths by qSOFA score at admission Stratified by age



Healthcare workers

Healthcare worker		NO	YES	р
Total N (%)		34687 (94.9)	1881 (5.1)	
NEWS score on admission	Median (IQR)	4.0 (4.0)	4.0 (4.0)	0.395

Healthcare worker		NO	YES	р
Death	No	17553 (62.9)	1432 (93.3)	<0.001
	Yes	10373 (37.1)	103 (6.7)	

Admission (detail)

Table 1

label	levels	all
Total N (%)		48101 (100.0)
Age on admission (years)	Mean (SD)	69.6 (20.1)
Sex at Birth	Male	24018 (49.9)
	Female	17468 (36.3)
	Not specified	77 (0.2)
	(Missing)	6538 (13.6)
Healthcare worker	YES	1881 (3.9)
	NO	34687 (72.1)
	N/A	4123 (8.6)
	(Missing)	7410 (15.4)
Microbiology lab worker	YES	81 (0.2)
	NO	22720 (47.2)
	N/A	2647 (5.5)
	(Missing)	22653 (47.1)
Onset to admission (days)	Mean (SD)	12.8 (1941.7)
Transfer from other facility	Yes-facility is a study site	770 (1.6)
	Yes-facility is not a study site	2108 (4.4)
	No	34396 (71.5)
	N/A	1495 (3.1)
	(Missing)	9332 (19.4)
Travel in 14 d prior to symptoms	Yes	763 (1.6)
	No	19692 (40.9)
	N/A	3802 (7.9)
	(Missing)	23844 (49.6)
Country	Afghanistan	0 (0.0)
	Albania	0 (0.0)
	Algeria	0 (0.0)
	Andorra	1 (0.0)
	Angola	0 (0.0)
	Antigua and Barbuda	4 (0.0)

Argentina	1 (0.0)
Armenia	0 (0.0)
Aruba	0 (0.0)
Australia	3 (0.0)
Austria	22 (0.0)
Azerbaijan	2 (0.0)
The	0 (0.0)
Bahrain	0 (0.0)
Bangladesh	1 (0.0)
Barbados	17 (0.0)
Belarus	0 (0.0)
Belgium	3 (0.0)
Belize	0 (0.0)
Benin	0 (0.0)
Bhutan	0 (0.0)
Bolivia	0 (0.0)
Bosnia and Herzegovina	0 (0.0)
Botswana	0 (0.0)
Brazil	3 (0.0)
Brunei	0 (0.0)
Bulgaria	3 (0.0)
Burkina Faso	0 (0.0)
Burma	0 (0.0)
Burundi	0 (0.0)
Cambodia	1 (0.0)
Cameroon	1 (0.0)
Canada	2 (0.0)
Cabo Verde	1 (0.0)
Central African Republic	0 (0.0)
Chad	0 (0.0)
Chile	1 (0.0)
China	2 (0.0)
Colombia	0 (0.0)
Comoros	0 (0.0)
Republic of the	0 (0.0)
Costa Rica	0 (0.0)

Cote dlvoire	0 (0.0)
Croatia	0 (0.0)
Cuba	1 (0.0)
Curacao	0 (0.0)
Cyprus	25 (0.1)
Czechia	2 (0.0)
Denmark	1 (0.0)
Djibouti	0 (0.0)
Dominica	0 (0.0)
Dominican Republic	3 (0.0)
Ecuador	0 (0.0)
Egypt	8 (0.0)
El Salvador	0 (0.0)
Equatorial Guinea	0 (0.0)
Eritrea	0 (0.0)
Estonia	0 (0.0)
Ethiopia	0 (0.0)
Fiji	0 (0.0)
Finland	0 (0.0)
France	30 (0.1)
Gabon	0 (0.0)
Georgia	0 (0.0)
Germany	8 (0.0)
Ghana	1 (0.0)
Greece	1 (0.0)
Grenada	0 (0.0)
Guatemala	0 (0.0)
Guinea	0 (0.0)
Guinea-Bissau	0 (0.0)
Guyana	0 (0.0)
Haiti	0 (0.0)
Holy See	0 (0.0)
Honduras	0 (0.0)
Hong Kong	0 (0.0)
Hungary	2 (0.0)
Iceland	1 (0.0)

India	9 (0.0)
Indonesia	0 (0.0)
Iran	6 (0.0)
Iraq	0 (0.0)
Ireland	7 (0.0)
Israel	0 (0.0)
Italy	87 (0.2)
Jamaica	3 (0.0)
Japan	6 (0.0)
Jordan	0 (0.0)
Kazakhstan	0 (0.0)
Kenya	1 (0.0)
Kiribati	0 (0.0)
South	0 (0.0)
Kosovo	0 (0.0)
Kuwait	1 (0.0)
Kyrgyzstan	0 (0.0)
Laos	0 (0.0)
Latvia	0 (0.0)
Lebanon	0 (0.0)
Lesotho	0 (0.0)
Liberia	0 (0.0)
Libya	0 (0.0)
Liechtenstein	0 (0.0)
Lithuania	0 (0.0)
Luxembourg	0 (0.0)
Macau	0 (0.0)
Macedonia	0 (0.0)
Madagascar	1 (0.0)
Malawi	0 (0.0)
Malaysia	4 (0.0)
Maldives	1 (0.0)
Mali	0 (0.0)
Malta	0 (0.0)
Marshall Islands	0 (0.0)
Mauritania	0 (0.0)

Mauritius	1 (0.0)
Mexico	4 (0.0)
Micronesia	0 (0.0)
Moldova	0 (0.0)
Monaco	0 (0.0)
Mongolia	0 (0.0)
Montenegro	0 (0.0)
Могоссо	4 (0.0)
Mozambique	0 (0.0)
Namibia	0 (0.0)
Nauru	0 (0.0)
Nepal	3 (0.0)
Netherlands	9 (0.0)
New Zealand	3 (0.0)
Nicaragua	0 (0.0)
Niger	0 (0.0)
Nigeria	2 (0.0)
North Korea	0 (0.0)
Norway	2 (0.0)
Oman	0 (0.0)
Pakistan	9 (0.0)
Palau	0 (0.0)
Palestinian Territories	0 (0.0)
Panama	1 (0.0)
Papua New Guinea	0 (0.0)
Paraguay	0 (0.0)
Peru	0 (0.0)
Philippines	5 (0.0)
Poland	3 (0.0)
Portugal	20 (0.0)
Qatar	1 (0.0)
Romania	6 (0.0)
Russia	0 (0.0)
Rwanda	0 (0.0)
Saint Kitts and Nevis	0 (0.0)
Saint Lucia	0 (0.0)

levels	all
Saint Vincent and the Grenadines	0 (0.0)
Samoa	0 (0.0)
San Marino	0 (0.0)
Sao Tome and Principe	0 (0.0)
Saudi Arabia	2 (0.0)
Senegal	0 (0.0)
Serbia	0 (0.0)
Seychelles	0 (0.0)
Sierra Leone	0 (0.0)
Singapore	4 (0.0)
Sint Maarten	0 (0.0)

Slovakia	1 (0.0)
Slovenia	0 (0.0)
Solomon Islands	0 (0.0)
Qlia	0 (0 0)

Somalia	2 (0.0)
South Africa	9 (0.0)
South Korea	1 (0.0)
South Sudan	0 (0.0)
Spain	187 (0.4)
Sri Lanka	0 (0.0)
Sudan	0 (0.0)
Suriname	0 (0.0)
Swaziland	1 (0.0)
Sweden	0 (0.0)

Syria
Taiwan
Tajikistan
Tanzania
Thailand
Timor-Leste

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ailand	
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То

Trinidad and Tobago

Switzerland

Tonga

Tunisia

Turkey

8 (0.0)

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0 (0.0)

7 (0.0)

	Turkmenistan	0 (0.0)
	Tuvalu	0 (0.0)
	Uganda	0 (0.0)
	Ukraine	0 (0.0)
	United Arab Emirates	9 (0.0)
	United Kingdom	110 (0.2)
	Uruguay	0 (0.0)
	Uzbekistan	0 (0.0)
	Vanuatu	0 (0.0)
	Venezuela	0 (0.0)
	Vietnam	0 (0.0)
	Yemen	1 (0.0)
	Zambia	0 (0.0)
	Zimbabwe	1 (0.0)
	(Missing)	47400 (98.5)
Country 2	Afghanistan	0 (0.0)
	Albania	0 (0.0)
	Algeria	1 (0.0)
	Andorra	0 (0.0)
	Angola	0 (0.0)
	Antigua and Barbuda	1 (0.0)
	Argentina	0 (0.0)
	Armenia	0 (0.0)
	Aruba	1 (0.0)
	Australia	2 (0.0)
	Austria	4 (0.0)
	Azerbaijan	0 (0.0)
	The	0 (0.0)
	Bahrain	0 (0.0)
	Bangladesh	0 (0.0)
	Barbados	2 (0.0)
	Belarus	0 (0.0)
	Belgium	0 (0.0)
	Belize	0 (0.0)
	Benin	0 (0.0)
	Bhutan	0 (0.0)

Bolivia	0 (0.0)
Bosnia and Herzegovina	0 (0.0)
Botswana	0 (0.0)
Brazil	0 (0.0)
Brunei	0 (0.0)
Bulgaria	2 (0.0)
Burkina Faso	0 (0.0)
Burma	0 (0.0)
Burundi	0 (0.0)
Cambodia	0 (0.0)
Cameroon	0 (0.0)
Canada	1 (0.0)
Cabo Verde	0 (0.0)
Central African Republic	0 (0.0)
Chad	0 (0.0)
Chile	0 (0.0)
China	0 (0.0)
Colombia	0 (0.0)
Comoros	0 (0.0)
Republic of the	0 (0.0)
Costa Rica	0 (0.0)
Cote dlvoire	0 (0.0)
Croatia	0 (0.0)
Cuba	0 (0.0)
Curacao	0 (0.0)
Cyprus	4 (0.0)
Czechia	1 (0.0)
Denmark	0 (0.0)
Djibouti	0 (0.0)
Dominica	0 (0.0)
Dominican Republic	0 (0.0)
Ecuador	0 (0.0)
Egypt	2 (0.0)
El Salvador	0 (0.0)
Equatorial Guinea	0 (0.0)
Eritrea	0 (0.0)

Estonia	0 (0.0)
Ethiopia	0 (0.0)
Fiji	0 (0.0)
Finland	0 (0.0)
France	8 (0.0)
Gabon	0 (0.0)
Georgia	0 (0.0)
Germany	3 (0.0)
Ghana	0 (0.0)
Greece	0 (0.0)
Grenada	0 (0.0)
Guatemala	0 (0.0)
Guinea	0 (0.0)
Guinea-Bissau	0 (0.0)
Guyana	0 (0.0)
Haiti	0 (0.0)
Holy See	0 (0.0)
Honduras	0 (0.0)
Hong Kong	0 (0.0)
Hungary	0 (0.0)
Iceland	0 (0.0)
India	3 (0.0)
Indonesia	1 (0.0)
Iran	0 (0.0)
Iraq	0 (0.0)
Ireland	1 (0.0)
Israel	1 (0.0)
Italy	16 (0.0)
Jamaica	1 <mark>(</mark> 0.0)
Japan	0 (0.0)
Jordan	0 (0.0)
Kazakhstan	0 (0.0)
Kenya	0 (0.0)
Kiribati	0 (0.0)
South	0 (0.0)
Kosovo	0 (0.0)

Kuwait	<mark>0 (</mark> 0.0)
Kyrgyzstan	0 (0.0)
Laos	0 (0.0)
Latvia	0 (0.0)
Lebanon	0 (0.0)
Lesotho	0 (0.0)
Liberia	0 (0.0)
Libya	0 (0.0)
Liechtenstein	<mark>0 (</mark> 0.0)
Lithuania	<mark>0 (</mark> 0.0)
Luxembourg	<mark>0 (</mark> 0.0)
Масаи	0 (0.0)
Macedonia	0 (0.0)
Madagascar	0 (0.0)
Malawi	0 (0.0)
Malaysia	0 (0.0)
Maldives	0 (0.0)
Mali	0 (0.0)
Malta	0 (0.0)
Marshall Islands	0 (0.0)
Mauritania	0 (0.0)
Mauritius	0 (0.0)
Mexico	0 (0.0)
Micronesia	0 (0.0)
Moldova	0 (0.0)
Monaco	0 (0.0)
Mongolia	0 (0.0)
Montenegro	0 (0.0)
Могоссо	1 (0.0)
Mozambique	0 (0.0)
Namibia	0 (0.0)
Nauru	<mark>0 (</mark> 0.0)
Nepal	<mark>0 (</mark> 0.0)
Netherlands	2 (0.0)
New Zealand	0 (0.0)
Nicaragua	0 (0.0)

Niger	0 (0.0)
Nigeria	0 (0.0)
North Korea	0 (0.0)
Norway	0 (0.0)
Oman	0 (0.0)
Pakistan	1 (0.0)
Palau	0 (0.0)
Palestinian Territories	0 (0.0)
Panama	0 (0.0)
Papua New Guinea	0 (0.0)
Paraguay	0 (0.0)
Peru	0 (0.0)
Philippines	0 (0.0)
Poland	0 (0.0)
Portugal	2 (0.0)
Qatar	1 (0.0)
Romania	0 (0.0)
Russia	0 (0.0)
Rwanda	0 (0.0)
Saint Kitts and Nevis	0 (0.0)
Saint Lucia	0 (0.0)
Saint Vincent and the Grenadines	0 (0.0)
Samoa	0 (0.0)
San Marino	0 (0.0)
Sao Tome and Principe	0 (0.0)
Saudi Arabia	0 (0.0)
Senegal	0 (0.0)
Serbia	0 (0.0)
Seychelles	0 (0.0)
Sierra Leone	0 (0.0)
Singapore	0 (0.0)
Sint Maarten	0 (0.0)
Slovakia	0 (0.0)
Slovenia	0 (0.0)
Solomon Islands	0 (0.0)
Somalia	0 (0.0)

South Africa	1 (0.0)
South Korea	0 (0.0)
South Sudan	0 (0.0)
Spain	19 (0.0)
Sri Lanka	0 (0.0)
Sudan	0 (0.0)
Suriname	0 (0.0)
Swaziland	0 (0.0)
Sweden	0 (0.0)
Switzerland	0 (0.0)
Syria	0 (0.0)
Taiwan	0 (0.0)
Tajikistan	0 (0.0)
Tanzania	0 (0.0)
Thailand	1 (0.0)
Timor-Leste	0 (0.0)
Тодо	0 (0.0)
Tonga	0 (0.0)
Trinidad and Tobago	0 (0.0)
Tunisia	0 (0.0)
Turkey	4 (0.0)
Turkmenistan	0 (0.0)
Tuvalu	0 (0.0)
Uganda	0 (0.0)
Ukraine	0 (0.0)
United Arab Emirates	0 (0.0)
United Kingdom	0 (0.0)
Uruguay	0 (0.0)
Uzbekistan	0 (0.0)
Vanuatu	0 (0.0)
Venezuela	0 (0.0)
Vietnam	1 <mark>(</mark> 0.0)
Yemen	0 (0.0)
Zambia	0 (0.0)
Zimbabwe	0 (0.0)
(Missing)	48013 (99.8)

label	levels	all
Animal, raw meat, insect bites 14 d prior	Yes	104 (0.2)
	No	9343 (19.4)
	Unknown	13415 (27.9)
	N/A	1612 (3.4)
	(Missing)	23627 (49.1)
Animal / insect	2 Budgerigars and 26 Cats at home	1 (1.0)
	2 cats	1 (1.0)
	2 dogs	1 (1.0)
	Bee Sting	1 (1.0)
	Bird (pet)	1 (1.0)
	bird (pigeon)	1 (1.0)
	Birds at home	1 (1.0)
	Budgie	1 (1.0)
	budgies	1 (1.0)
	cat	2 (2.0)
	Cat	1 (1.0)
	CAT	1 (1.0)
	Cat (pet)	1 (1.0)
	Cat / Dog	1 (1.0)
	Cat, Dog (pets)	1 (1.0)
	cats	2 (2.0)
	Cats	1 (1.0)
	chicken & beef	1 (1.0)
	Chickens	2 (2.0)
	COWS	1 (1.0)
	cows, rabbits, pigs goats	1 (1.0)
	DAILY CONTACT WITH DOMESTIC PET CAT	1 (1.0)
	dog	5 (4.9)
	Dog	12 (11.8)
	DOG	3 (2.9)
	DOG FAMILY PET	1 (1.0)
	Dog, domestic animla living in their home.	1 (1.0)
	Dogs	1 (1.0)
	dogs and cats	1 (1.0)
	Dogs at home	1 (1.0)
	domestic	1 (1.0)

Domestic pet dog	1 (1.0)
DOMESTIC ANIMAL	2 (2.0)
Domestic animal and faeces/nest	1 (1.0)
domestic animal living in his home	1 (1.0)
domestic animals	1 (1.0)
Domestic animals living in his/her home	1 (1.0)
Domestic Animals living in his/her home	1 (1.0)
Domestic animals living in home	1 (1.0)
Domestic cats	1 (1.0)
domestic dog	1 (1.0)
domestic Dog	1 (1.0)
Domestic Per (dog)	1 (1.0)
Domestic pest (cats)	1 (1.0)
Domestic Pet	5 (4.9)
Domestic Pet (Dog)	6 (5.9)
Domestic pet cat	1 (1.0)
Domestic pet Dog	1 (1.0)
Domestic pet, dog	1 (1.0)
Domestic pets	1 (1.0)
Domestic Pets	2 (2.0)
Domestic pets (dog)	1 (1.0)
Domestic Pets Cat and Dog	1 (1.0)
FARM ANIMALS - LAMBS	1 (1.0)
Farm animals, cattle	1 (1.0)
Guinea Pig	1 (1.0)
HORSES	1 (1.0)
pet dog	2 (2.0)
Pet dog	1 (1.0)
Pet dog -ongoing daily contact	1 (1.0)
Pet dog ongoing daily contact	1 (1.0)
Prepared raw chicken	1 (1.0)
raw chicken	1 (1.0)
Raw Chicken	1 (1.0)
Rodent	1 (1.0)
Rodent - hamster,	1 (1.0)
she has a cat	1 (1.0)

levels

Sheep & Cattle	1 (1.0)
Two cats	1 (1.0)
unknown	1 (1.0)

Symptoms (detail)

Table 2

Stratified: all		all
Total N (%)		48101 (100.0)
Fever	YES	24134 (50.2)
	NO	11460 (23.8)
	Unknown	2050 (4.3)
	(Missing)	10457 (21.7)
Cough	YES	24639 (51.2)
	NO	10744 (22.3)
	Unknown	2265 (4.7)
	(Missing)	10453 (21.7)
Cough (sputum)	YES	7224 (15.0)
	NO	22412 (46.6)
	Unknown	7837 (16.3)
	(Missing)	10628 (22.1)
Cough (blood)	YES	873 (1.8)
	NO	28098 (58.4)
	Unknown	8471 (17.6)
	(Missing)	10659 (22.2)
Sore throat	YES	2366 (4.9)
	NO	24755 (51.5)
	Unknown	10326 (21.5)
	(Missing)	10654 (22.1)
Runny nose	YES	785 (1.6)
	NO	25754 (53.5)
	Unknown	10896 (22.7)
	(Missing)	10666 (22.2)
Ear pain	YES	145 (0.3)
	NO	26367 (54.8)
	Unknown	10920 (22.7)
	(Missing)	10669 (22.2)

all

Wheeze	YES	2777 (5.8)
	NO	25949 (53.9)
	Unknown	8720 (18.1)
	(Missing)	10655 (22.2)
Chest pain	YES	4270 (8.9)
	NO	26024 (54.1)
	Unknown	7160 (14.9)
	(Missing)	10647 (22.1)
Muscle ache	YES	5207 (10.8)
	NO	22352 (46.5)
	Unknown	9871 (20.5)
	(Missing)	10671 (22.2)
Joint pain	YES	1872 (3.9)
	NO	24669 (51.3)
	Unknown	10861 (22.6)
	(Missing)	10699 (22.2)
Fatigue	YES	13013 (27.1)
	NO	16475 (34.3)
	Unknown	7963 (16.6)
	(Missing)	10650 (22.1)
Shortness of breath	YES	23870 (49.6)
	NO	10849 (22.6)
	Unknown	2939 (6.1)
	(Missing)	10443 (21.7)
Lower chest wall indrawing	YES	382 (0.8)
	NO	25356 (52.7)
	Unknown	11671 (24.3)
	(Missing)	10692 (22.2)
Headache	YES	3087 (6.4)
	NO	24401 (50.7)
	Unknown	9951 (20.7)
	(Missing)	10662 (22.2)
Confusion	YES	9157 (19.0)
	NO	22884 (47.6)
	Unknown	5460 (11.4)

(Missing)

Stratified: all

10600 (22.0)

Stra	tified	d: all

Seizures	YES	507 (1.1)
	NO	29721 (61.8)
	Unknown	7203 (15.0)
	(Missing)	10670 (22.2)
Abdominal pain	YES	3203 (6.7)
	NO	27002 (56.1)
	Unknown	7268 (15.1)
	(Missing)	10628 (22.1)
Nausa/vomiting	YES	6162 (12.8)
	NO	25224 (52.4)
	Unknown	6107 (12.7)
	(Missing)	10608 (22.1)
Diarrhoea	YES	5946 (12.4)
	NO	25309 (52.6)
	Unknown	6227 (12.9)
	(Missing)	10619 (22.1)
Conjunctivitis	YES	108 (0.2)
	NO	27923 (58.1)
	Unknown	9408 (19.6)
	(Missing)	10662 (22.2)
Skin rash	YES	458 (1.0)
	NO	28159 (58.5)
	Unknown	8830 (18.4)
	(Missing)	10654 (22.1)
Skin ulcers	YES	746 (1.6)
	NO	27899 (58.0)
	Unknown	8790 (18.3)
	(Missing)	10666 (22.2)
Lymphadenopathy	YES	173 (0.4)
	NO	27981 (58.2)
	Unknown	9278 (19.3)
	(Missing)	10669 (22.2)
Bleeding (Haemorrhage)	YES	466 (1.0)
	NO	29331 (61.0)
	Unknown	7636 (15.9)
	(Missing)	10668 (22.2)

all

Stratified: all		all
If Bleeding (others)	YES	436 (0.9)
	NO	18140 (37.7)
	Unknown	5083 (10.6)
	(Missing)	24442 (50.8)

Comorbidity (detail)

Table 3

Stratified: all		all
Total N (%)		48101 (100.0)
Chronic cardiac disease	YES	11468 (23.8)
	NO	24454 (50.8)
	Unknown	1826 (3.8)
	(Missing)	10353 (21.5)
Chronic pulmonary disease	YES	6392 (13.3)
	NO	29381 (61.1)
	Unknown	1953 (4.1)
	(Missing)	10375 (21.6)
Asthma	YES	5003 (10.4)
	NO	30597 (63.6)
	Unknown	2079 (4.3)
	(Missing)	10422 (21.7)
Chronic kidney disease	YES	6066 (12.6)
	NO	29531 (61.4)
	Unknown	2108 (4.4)
	(Missing)	10396 (21.6)
Moderate/severe liver disease	YES	653 (1.4)
	NO	34576 (71.9)
	Unknown	2446 (5.1)
	(Missing)	10426 (21.7)
Mild Liver disease	YES	538 (1.1)
	NO	34597 (71.9)
	Unknown	2535 (5.3)
	(Missing)	10431 (21.7)
Chronic neurological disorder	YES	4330 (9.0)
	NO	31028 (64.5)
	Unknown	2316 (4.8)

|--|

	(Missing)	10427 (21.7)
Malignancy	YES	3555 (7.4)
	NO	31715 (65.9)
	Unknown	2411 (5.0)
	(Missing)	10420 (21.7)
Chronic hematologic disease	YES	1490 (3.1)
	NO	33723 (70.1)
	Unknown	2446 (5.1)
	(Missing)	10442 (21.7)
AIDS/HIV	YES	147 (0.3)
	NO	34793 (72.3)
	Unknown	2736 (5.7)
	(Missing)	10425 (21.7)
Obesity	YES	3617 (7.5)
	NO	28747 (59.8)
	Unknown	5209 (10.8)
	(Missing)	10528 (21.9)
Diabetes with complications	YES	2608 (5.4)
	NO	32338 (67.2)
	Unknown	2732 (5.7)
	(Missing)	10423 (21.7)
Diabetes without complications	YES	6555 (13.6)
	NO	28514 (59.3)
	Unknown	2621 (5.4)
	(Missing)	10411 (21.6)
Rheumatologic disorder	YES	3712 (7.7)
	NO	31423 (65.3)
	Unknown	2514 (5.2)
	(Missing)	10452 (21.7)
Dementia	YES	5616 (11.7)
	NO	29872 (62.1)
	Unknown	2216 (4.6)
	(Missing)	10397 (21.6)
Malnutrition	YES	857 (1.8)
	NO	32607 (67.8)
	Unknown	4133 (8.6)

all

Stratified: all		all
	(Missing)	10504 (21.8)
Smoking	YES	1828 (3.8)
	NO	23629 (49.1)
	(Missing)	22644 (47.1)