

Symptom-based case definitions for COVID-19: time and geographical variations for detection at hospital admission among 260,000 patients

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Abstract

Introduction: Case definitions are used to guide clinical practice, surveillance, and research protocols. However, how they identify COVID-19-hospitalised patients is not fully understood. We analysed the proportion of hospitalised patients with laboratory-confirmed COVID-19, in the ISARIC prospective cohort study database, meeting widely used case definitions. **Methods:** Patients were assessed using the CDC, ECDC, WHO, and UKHSA case definitions by age, region, and time. Case fatality ratios (CFR) and symptoms of those who did and who did not meet the case definitions were evaluated. Patients with incomplete data and non-laboratory-confirmed test-result were excluded. **Results:** 263,218 of the patients (42%) in the ISARIC database were included. Most patients (90.4%) were from Europe and Central Asia. The proportions of patients meeting the case definitions were 56.8% (WHO), 74.4% (UKHSA), 81.6% (ECDC), and 82.3% (CDC). For each case definition, patients at the extremes of age distribution met the criteria less frequently than those aged 30 to 70 years; geographical and time variations were also observed. Estimated CFRs were similar for the patients that met the case definitions. However, when more patients did not meet the case definition, the CFR increased. **Conclusions:** The performance of case definitions might be different in different regions and may change over time. Similarly concerning is the fact that older patients often did not meet case definitions. While epidemiologists must balance their analytics with field applicability, ongoing revision of case definitions is necessary to improve patient care through early diagnosis and limit potential nosocomial spread.

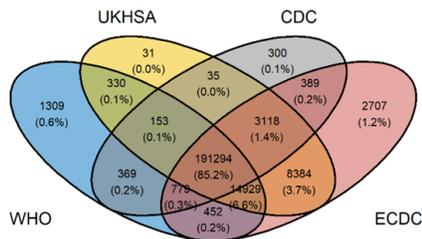
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Case definition_DraftManuscript_Final_Influenza_J.docx available at <https://authorea.com/users/492379/articles/575096-symptom-based-case-definitions-for-covid-19-time-and-geographical-variations-for-detection-at-hospital-admission-among-260-000-patients>

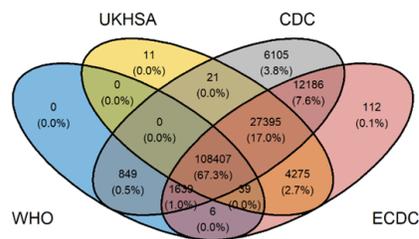
Total database	800,459			
Laboratory-confirmed	633,703			
Missing BL symptoms (349,0196)				
Missing age/country/date (8,498)				
Region too small (12,971)				
Analysis dataset	263,218			

	Analysed	Met	% Met
CDC	196,437	161,668	82.3%
ECDC	222,052	181,194	81.6%
UKHSA	218,274	162,396	74.4%
WHO	209,615	119,061	56.8%

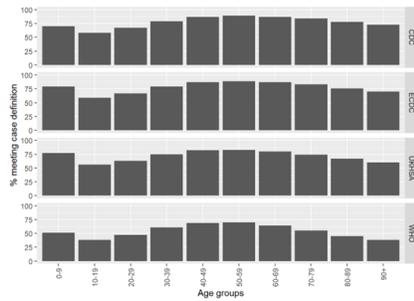
A) Agreement between patients' inclusion in the different datasets (N = 263,218).



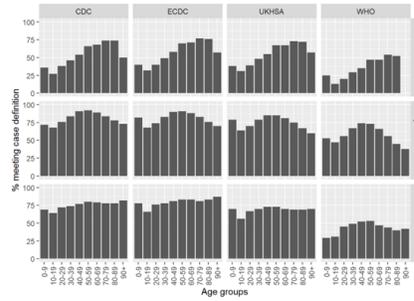
B) Agreement between patients' that met the case definitions (N = 191,294 (patients in all datasets)).



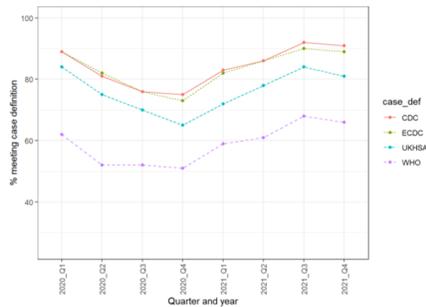
A) Percentage of patients meeting the case definitions age group



B) Percentage of patients meeting the case definitions by region and age group



A) Percentage of patients meeting each case definition over time



B) Percentage of patients meeting each case definition over time and age group

