The purpose of this study was to perform a systematic review and meta-analysis of the diagnostic accuracy of LUS for the diagnosis of COVID-19. This is the first meta-analysis in this evolving area of research and combines data from almost 4,000 patients.

Methods/Design This work was synthesised according to the PRISMA guidelines. A research question was formulated according to the PICOTS framework and a search strategy was developed in accordance with existing guidance. A screening and selection tool was used to identify studies from the initial search. All prospective and retrospective trials of adult patients comparing LUS to either RT-PCR testing, chest CT or a final clinical diagnosis were included.

Data analysis was performed in R. Random effects bivariate binomial models were used to estimate overall sensitivity, specificity, and the hierarchical summary receiver operating characteristic (HSROC) curve for LUS. The QUADAS-2 tool was used to assess the quality of included studies.

Results/Conclusions 19 studies were included in the meta-analysis, providing data for 3,954 patients in total. LUS demonstrated an overall (pooled) sensitivity of 87.3% (95% CI 83.4–90.5) and specificity of 70.0% (61.6–76.4). The overall positive and negative likelihood ratios were 3.04 (2.27–4.06) and 0.16 (0.12–0.22) respectively. Heterogeneity between studies was found to be high, with I² values of 72.6% (59.2–91.7) and 87% (83.5–95.9) for sensitivity and specificity respectively.

LUS was found to be highly sensitive in a high prevalence population and may improve detection of COVID-19 pneumonia compared to CXR. In patients requiring hospital admission a normal LUS should prompt consideration of alternative diagnoses.

Introduction Emergency conditions constitute a large proportion of the total global burden of disease and annual global deaths. All 10 leading causes of death in LMICs are conditions which are amenable to emergency care. Much of the research performed in the sub-Saharan African region focuses on single disease processes or particular causations, giving a skewed impression of disease burden. The lack of comprehensive information concerning emergency care delivery has stunted attempts to improve emergency care systems in LMICs.

Objective To understand the current evidence base available regarding the all-cause demographics, characteristics and epidemiology of patient presentations to an emergency setting within LMIC/LIC sub-Saharan African countries.

Methods A systematic search was conducted on 23rd January 2020 of PubMed, Embase, Global Health and Google Scholar for peer reviewed literature published in English from January 2000 to January 2020 describing all-cause presentations at facility-based emergency care in Sub-Saharan LIC or LMIC countries. Articles were screened at title and full text level.

Results 19227 articles were screened at title level, 43 were screened at full-text level. 21 articles fit the inclusion criteria. Of 41 LMIC/LIC sub-Saharan African countries included, 31 were unrepresented due to lack of published data. Overall data quality was poor. Only 1 study fulfilled the suggested minimum core data set for emergency care surveillance. Outcome data was lacking or only partially reported in a number of papers. Chief complaints and disease categorisation reporting lacked a unified approach or reporting system making comparisons both within and between countries extremely challenging.

Conclusion Despite considerable progress being made in recognising the need for integrated emergency care systems in all global regions, the data available to policy makers and system implementers remains sparse. This review demonstrates that critical investment is required to produce quality data from the current emergency systems in LMIC/LICs.