first USS were rising haematocrit above baseline 10.8% (43/400), haemodynamic instability 4.5% (18/400), low urine output 3.2% (13/400), dullness to percussion, reduced breath sounds (clinical suspicion) 7.5% (30/400). Early USS detected DHF in all and showed progressive leaking on serial USS (gradual fluid accumulation). In 90% (360/400) progressive leaking of mild degree (pleural effusion under 2 cm, fluid in Morrison’s pouch, pericholecystic thickening/pericholecystic effusion) was noted while 10% (40/400) had gross leaking (pleural effusion above 2 cm and ascites). 74% (297/400) had progressive leaking to abdomen and 26% (103/400) had leaking into abdomen and chest. None had leaking confined to pleural space.

Conclusion: This study proves routine USS is essential to detect all DHF cases early. Many leak into abdomen, which is clinically undetectable while clinically detectable leaking is gross and progressed.

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0522

Descriptive epidemiology of monkeypox in Nigeria, September 2017–June 2019

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Background: Human monkeypox is a rare zoonotic infection caused by an orthopoxvirus and characterized by smallpox-like signs and symptoms. Reported outbreaks have occurred mainly in rural rainforest areas of the Congo basin and West Africa. In September 2017, Nigeria experienced a resurgence of monkeypox. Prior to this, the last of three cases recorded was in 1978. Since then sporadic cases have continued to occur, especially in the Southern part of the country. We present a descriptive epidemiology of monkeypox outbreak in Nigeria from September 2017 to June 2019.

Methods and materials: A retrospective review of monkeypox cases reported to the Nigeria Centre for Disease Control over the period was conducted. Data was cleaned and analyzed for socio-demographic characteristics and signs and symptoms using Microsoft Office Excel version 2010. Counts, frequencies and proportions were determined.

Results: Of 370 suspected cases reported in 30 states, 165 (45.8%) were confirmed in 17 states. Five cases had both monkeypox and chickenpox. Males constituted 115 (70.1%) of cases with mean age of 29.3 ± 11 years. Those most affected were 31–40 years old. 9 deaths were recorded (CFR – 5.5%), 67% in known immune-susceptible patients. Case reporting was highest within the first two months of the outbreak; but have continued to occur since then. Most common clinical presentations include rash (all cases), fever (n = 106, 64.8%) and headache (n = 78, 47.3%). Fever preceded rash in 59 (35.8%) of cases. Most common lesions include facial (n = 100, 60.6%), leg (n = 90, 54.5%), hand and thoracic (n = 84, 50.9%). Cases were mostly confined to the Southern and Central parts of the country.

Conclusion: Since the largest outbreak of monkeypox in 2017, sporadic cases have continue to occur in Nigeria pointing to endemicity of the disease. Unlike the Central African clade cases are mostly seen in urban dwellers, especially among active young males.

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0523

In search for the hotspots of Disease X: A biogeographic approach to mapping the predictive risk of WHO’s Blueprint Priority Diseases

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Background: Current trends of emerging infectious disease outbreaks (EIDs) forecast impending global epidemiological crises. Human-driven environmental changes, including climate change along with overpopulation and global travel, have been contributing to EIDs outbreaks in many developing countries. The subject has attracted increasing attention with the recent Ebola and Zika epidemics, which highlights the potential threats to human and animal health, social stability, and global trade and economy. The Blueprint Priority Diseases (BPDs) is a list established by the World Health Organization of ten zoonotic diseases, which are in urgent need of research. We proposed mapping the predictive risk of the BPDs using spatial Bayesian models and species distribution modelling of the outbreaks following the year 2000. The aim is to provide a global perspective, measure predictive risks, and evaluate the use of biogeography on predicting diseases outbreaks. We also proposed disease biogeography as a tool for identifying the potential hotspots for Disease X listed in the BPDs.

Methods and materials: Data of the observed outbreaks (2000–2018) were obtained from promed mail and WHO archives. Bioclimatic covariates and altitude data were extracted from ‘worldclim’ (R package dismo) and the 2017 land cover data (MODIS satellite imagery). We constructed species distribution models including bioclim, maxent and Bayesian models with absence data generated to map the predictive risk of future outbreaks.

Results: Most of the predicted geographic risk extent estimated from the observed data of MERS, Marburg Virus Disease and Rift Valley Fever were found to occur in arid and across the Middle East and Eastern regions of Africa. The predictive extent of Lassa fever and Ebola Virus Disease consisted of regions in the Western and Central Africa, predominated by humid rainforests. We found a significant correlation between the disease extent and the distribution of confirmed and suspected biological reservoirs and also with deforestation. The AUC of the generated models was maintained over 0.9 (average ~ 0.978).

Conclusion: Biogeography is a robust tool in forecasting hotspots of EIDs outbreaks. We will also complete the analysis by aggregating the common risk factors of the predicted EIDs to characterize hotspots for an unknown Disease X.