UK, and Ireland [1] some are based and managed within NHS hospitals, others within universities (with a research focus) and some within Public Health England (with more of a reference test function, and also leadership for high threat pathogens). All 45 have a common approach, are Consultant-led, and, together, cover the whole UK population (including the devolved nations). Quality standards are maintained through the Royal College of Pathologists CPD scheme, and widespread informal interactions between laboratories are enhanced through the Clinical Virology Network, which provides a professional forum for joint learning, coordination of services, and supports laboratory quality control systems, including those run through the National Institute of Biological Standards and Control (NIBSC, which sits within the MHRA). Over the last 10-15 years, there has been a tendency for NHS Pathology services (which include laboratory specialties such as virology) to coalesce, often within public-private partnerships (following the influential Carter Report in 2006) in the name of increased efficiency. This has not generally limited the ability of virology services to respond to emergencies such as COVID-19.

13. Critically, these laboratories work seamlessly with local NHS data systems, including primary care and hospitals, as well as public health, to ensure that laboratory results flow quickly (electronically), within a firewall compliant environment. Such linkage is an essential requirement for assessing the OUTCOME of diagnostic testing: for instance the epidemiological and demographic associations with infection, clinical consequences of infection, and infection control risk.

14. Local management of infection outbreaks (of any form) was provided under the auspices of the Public Health Laboratory Service (PHLS), set up in conjunction with the NHS in 1945. This was maintained until transition to the Health Protection Agency in 2003, an organisation which included other health risks such as chemical and environmental threats. The most major change occurred with the next transition to Public Health England in 2012, in which local public health responsibility moved back to local authorities following the Lansley reforms. The aim was to allow an integrated local public health framework; however, resource was significantly reduced over time because of competition with other local authority priorities. Thus, by 2020, a fully-fledged integrated public health and laboratory population protection structure had been diminished.

15. Nevertheless, there remained considerable expertise through local Directors of Public Health and outbreak control teams. Despite this, the immediate COVID response involved very significant investment in a series of outsourced functions, rather than using such resource to rebuild existing structures. Further, PHE was itself dismantled, to be replaced firstly by National Institute

[1] As described in https://clinicalvirology.org/networking-directory/