

Mega-laboratory in Leamington Spa: a Trojan Horse for a Private System

Pat McGee
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Summary

In this report we discuss efforts to further undermine National Health Service facilities by the government's announcement of two new 'Mega-labs' in the UK, one of which is currently being set up in Leamington Spa. We show that this 'Trojan Horse' strategy represents a deception which seeks to hide its true intent: to set up, parallel to the NHS, a poorly regulated, inferior service, where private profit trumps quality and safety.

We highlight that this privately run facility seeks to duplicate, and potentially replace, NHS based diagnostic services, both locally and nationwide.

We raise concerns regarding the lack of regulation, accreditation and quality standards of these facilities and of their employees, which fall far short of the requirements within NHS based laboratories.

We evidence that state-of-the-art NHS facilities are already in place in Coventry and Warwickshire, providing safe, efficient and cost-effective diagnostic services to our hospitals and GPs, results being delivered in a timely manner through established IT links.

We call for local NHS Pathology services to continue to provide all such diagnostic services, and to receive the investment required to expand Covid-19 and other diagnostics, in order to maintain their essential role in contributing to optimal provision of patient care within Coventry and Warwickshire.

With the total Pathology budget within the UK worth more than £2bn, technology and diagnostic companies are keen to cream off a large slice of this for private profit. Ministers appear not only to be utilising interim powers under emergency Covid-19 legislation to facilitate this privatisation but are allowing private providers to make savings by circumnavigating national standards designed to ensure quality pathology services.

In Section 1 we raise and discuss in detail concerns around the new 'Mega-lab' in Leamington Spa

In Section 2 we compare the Leamington Spa laboratory with the relative merits of our local NHS Pathology Services

In Section 3 we discuss the emergence of privatized testing and diagnostic facilities during the Covid-19 pandemic with seemingly little regard for the well-established regulatory and quality standards evidenced in Appendices A, B and C

In the Appendices we evidence the measures currently in place to ensure and maintain safe and effective diagnostic services

Appendix A Accreditation and Quality Standards with NHS Laboratories

Appendix B Staff Training, State Registration and Regulation within NHS Laboratories

Appendix C Use of existing IT Connectivity to provide accurate, quality assured and timely diagnostic results to clinicians* providing direct patient care

* Clinicians include GPs, Hospital Doctors, Nurses and Allied Health Professions such as Radiographers and Physiotherapists

Pat McGee - Former State Registered Biomedical Scientist, previously employed by Coventry and Warwickshire Pathology Services (CWPS) at University Hospitals Coventry & Warwickshire NHS Trust (UHCW)
- Secretary of the UHCW Branch of Unite the Union
- Chair of Coventry Keep Our NHS Public

With thanks for assistance to Anna Pollert - Secretary of South Warwickshire Keep Our NHS Public.

Section 1: A New 'Mega-lab' in Leamington Spa

In November 2020, it was announced that Leamington Spa had been selected as the site of one of two new 'Mega-labs' in the UK for large scale Covid-19 diagnostic testing. It could create up to 2,000 jobs in the local area and would be *'one of the largest diagnostic facilities in the UK'*. The other lab would be based in Scotland. [endnote 1]

Health Secretary Matt Hancock said:

'The radical expansion of testing has been one of the successes of this pandemic, as it means more people can get a test more conveniently than ever before. We didn't go into this crisis with a significant diagnostics industry, but we have built one, and these 2 Mega labs are another step forward. Transforming the UK's diagnostic facilities is not only essential to beating this virus, but it is necessary to build back better - so we are better prepared in future for testing on a massive scale.'

'These Mega labs are future-proofing our national infrastructure to respond to future epidemics and improving care for other diseases, such as cancer. The new labs build on our existing testing network which we created in a matter of months and confirms the UK as a world leader in diagnostic's.' [endnote 2]

Hancock's claim that the UK did not have a 'significant diagnostic industry' trashes the existence of the established, but underfunded, NHS-run pathology service. And his silence about the private ownership of the new Mega-labs conceals the real agenda of this government, which is to establish and entrench a privately run health pathology system bypassing and running in parallel with the NHS diagnostic and pathology service.

As *Health Campaigns Together* (December 2020) explains:

'After setting up the part-privatised "lighthouse" laboratory network to process Covid tests as an ad-hoc parallel system to existing NHS labs, the government is now committed to establishing a new fully privatised network of "Megalabs." And just as the lighthouse labs were set up as unregulated bodies without reference to the Institute of Biomedical Sciences, the new Megalabs are to be run by a private company, Medacs, with no expertise in medical science or laboratories....Medacs, which until now has provided GP locums, is to be given a contract to run the new labs, which will include a brand new 24/7 facility in Leamington Spa employing 2,000 full time staff. Like so many PPE contracts, this contract has not been advertised or put out to tender.' [endnote 3]

The *Lowdown* (November 22nd 2020) revealed that:

'Companies involved in the Lighthouse programme so far include Medicines Discovery Catapult, UK Biocentre, GlaxoSmithKline, AstraZeneca and PerkinElmer, and the DHSC also has partnership agreements 'with other commercial providers - the latter including Randox in Northern Ireland - to assist in the covid-19 swab-testing programme.' [endnote 4]

The function of the private laboratory in Leamington Spa will be two-fold: to carry out Covid-19 testing and to expand its repertoire to other Pathology testing.

The *Lowdown* investigation finds that private sector involvement in pathology has long been planned - and the track record is cause for worry:

'And unlike the 'pop up' Nightingale hospitals, Hancock claimed that, "[The labs] will represent a permanent part of the UK's new diagnostics industry... [giving] our country a permanent defence that we need for any future epidemic." '.....

In 2018 BMC Health Services Research found that this consolidation of pathology services in England had already been matched by a significant increase in private sector involvement, reaching 13 per cent of the total pathology budget.

It added, "The interest of private sector in providing pathology services should not come as a surprise. The total pathology budget is worth more than £2bn and there is a wide range of technology and diagnostic companies that would like a share of it."

However, while Hancock's latest expansion of the Lighthouse Mega lab programme should therefore come as no surprise, it arrives alongside continuing concerns over health and safety issues, data sharing with local authorities and the fact that existing NHS services can deliver results more cheaply and efficiently.....

...In April, a worker at the Lighthouse laboratory in Milton Keynes, run by UK Biocentre, told the Guardian that the facility had received hundreds of swabs in vials that were either leaking or not sealed in two bags as required, meaning the couriers and technicians handling them risked contamination. Six months later a joint investigation by the BBC and the Independent revealed further problems at the site, and highlighted overcrowded biosecure workspaces, poor safety protocols and a lack of suitable PPE....

...And Newcastle University public health professor Allyson Pollock was equally blunt, saying, "This looks like a big subsidy for industry through the back door to support the government's policy of building a British diagnostics industry."

....Health professionals' concerns were entirely justified, as neatly summarised in a BMA report published in September, which noted that 44 NHS pathology labs were left under used during the height of the pandemic, and that outsourcing resulted in "significant adverse effects". It gave one simple example: delays at Lighthouse labs had on occasion left hospital staff unaware of their Covid status for up to seven days while awaiting test results... when NHS facilities could have determined those results in just six hours.' [endnote 4]

Covid-19 testing is currently carried out both by NHS laboratories within local hospitals, and by the Lighthouse Laboratories, the majority of which are run by private companies. We can evidence that all Covid-19 testing could and should be carried out by local NHS laboratories which, in contrast to the private facilities, are accredited and regulated.

Section 2: Local Coventry and Warwickshire Pathology Service (CWPS) vs the Mega lab

Why seek to undermine a service which is performing well rather than invest in its future development?

The local Coventry and Warwickshire Pathology Service provides *'high-quality diagnostic and clinical interpretive services to its users'*, to include cancer testing and a fully comprehensive range of diagnostic testing in the fields of Microbiology, Molecular Pathology, Clinical Biochemistry and Immunology, Haematology, Blood Transfusion and Cellular Pathology. This 24/7 service provides rapid turnaround of diagnostic testing to Emergency Departments, inpatients, outpatients, GPs and other clinics.

'Coventry and Warwickshire Pathology Services (CWPS) is a managed network of laboratories hosted by University Hospitals of Coventry and Warwickshire NHS Trust. Laboratory services are provided by laboratories at University Hospital, Coventry, South Warwickshire Hospital, Warwick and George Eliot Hospital, Nuneaton. The CWPS provides a comprehensive service to the above hospitals and to the General practitioners in Coventry and Warwickshire.' [endnote 5]

'The Coventry and Warwickshire Pathology Services will provide a high quality diagnostic and clinical interpretive service to its users.'

'Every effort is made to ensure an accurate result is issued promptly to the correct source. To ensure the highest quality of service, all departments participate in the relevant External Quality Assurance Schemes that are available and rigorous internal QC checks are regularly made.'

'CWPS laboratories are a UKAS accredited medical laboratory No 8718, 8719, 8720 and 8721.' [endnote 6]

'Biomedical Scientists...Complete complex tasks according to strict protocols (SOPs) Using technology, knowledge and expertise to perform and report on quality assured tests. Training and competence meets the requirement of the Health and Care Professions Council and professional bodies such as the Institute of Biomedical Sciences.' [endnote 7]

CWPS employs more than 500 staff, to include Medical Consultants, Clinical Scientists and Biomedical Scientists. Support staff include Biomedical Assistants, who are unqualified but highly trained and supervised.

NHS laboratories have robust IT links already in place to ensure that accurate, timely, quality assured, validated and interpreted results reach the patient records and GPs, to be available to all NHS clinicians providing patient care. This is not the case with the new private Lighthouse labs. As stated by the Institute of Biomedical Science (IBMS), the leading professional body for scientists, support staff and students in the field of biomedical science, *'Whilst we recognise the need to rapidly upscale testing capacity and the fact that this will be an ongoing requirement, we have consistently voiced our members' concerns about the centralised approach to testing. This has led to the creation of the lighthouse laboratories as a parallel but disconnected testing stream for COVID-19 and there has been a lack of transparency around processes of clinical governance and, in particular, the limited IT connectivity of these laboratories to clinical systems already in place.'* [endnote 8]

'Healthcare laboratories are involved in over 70% of diagnoses in the NHS and handle hundreds of millions of patient samples every year.' [endnote 9] Additionally, pathology results are essential in monitoring both the efficacy and any detrimental effects of treatment.

The new Mega-lab is clearly designed to duplicate existing services.

The NHS services could, with the necessary investment, continue to expand diagnostic testing to meet future demands.

We question why Mr Hancock believes the Leamington laboratory to be a requirement. There is no gap in the current local diagnostic services, though underfunding over the years has led to considerable challenges. Maintaining adequate staffing levels is another challenge. Over the last ten years NHS pay is estimated to have dropped by some 15-20% in real terms.

We have no information on training within the mega-lab. As with private healthcare providers, who recruit surgeons, nurses, radiographers etc who have acquired their training, experience and expertise within and at the expense of the NHS, we expect many skilled personnel at the Leamington laboratory to be similarly trained. Others recruits may have scientific qualifications, but lack the biomedical knowledge required to provide a patient-centred diagnostic service. Medical interpretation and advice provide an essential link between pathology services and the clinicians providing direct patient care. We have no information regarding this type of service and liaison within these private laboratories.

The IBMS has expressed concerns to The Lowdown (January 8th 2021) about the Medacs Mega lab in Leamington:

"There is a significant risk that employing 2000 staff at this stage could destabilise the existing NHS and private laboratories currently providing a diagnostic service to the acute and primary care service. We are all "fishing in the same pond" as we try and increase capacity for COVID testing to meet clinical demand.

"We have evidence that recruitment agencies working for the Lighthouse labs have been directly approaching Biomedical Scientists working in the NHS to offer them enhanced salaries to tempt them to leave the NHS.

"It is a concern that instead of working with the professional bodies and the existing pathology community to explore how these new mass testing labs could be staffed and run as extensions of the existing pathology labs, the government has chosen to engage with a recruitment agency with no pathology experience." [endnote 10]

In addition to the problem of poaching skilled professionals from the NHS, it appears that the new Mega-lab in Leamington Spa, like the Lighthouse laboratories, is not accredited by UKAS (UK Accreditation Service) and it is questionable whether it could meet the rigorous quality standards. [Discussed further in Section 3 and Appendix A]

Advertisements for staff recruitment evidence that there is no mandatory requirement for regulated and appropriately trained State Registered Biomedical Scientists.

(Refer to Appendix B for further detail)

Advertised salaries are higher than those in the NHS. Salaries within Coventry and Warwickshire Pathology Service (CWPS) remain relatively low, mainly due to austerity and subsequent NHS pay constraints. Poor pay is also partially attributable to 'downgrading' of qualified staff within CWPS, probably due to funding constraints. We are likely therefore to see attrition of NHS staff within CWPS and other Pathology Services particularly within the Midlands. This is already occurring, providing further staffing challenges within NHS labs. This reduces the resilience of the NHS labs to provide pathology services, both in the future and during the ongoing pandemic. Matt Hancock clearly expects the Mega labs to extend their repertoire to include many more pathology tests in the future, including cancer testing, undermining the NHS labs and potentially reducing their viability.

Should providers elect in the future to award contracts to these private laboratories in preference to the NHS facilities, the decrease in income could render the NHS laboratories financially insolvent.

So, a dumbed down privatised service being provided by stealth, bypassing all the issues which we would have raised and which would have had to be addressed if they had simply put the pathology contract out to tender.

Section 3 Emergence of an alternative, privately run testing system during the Covid-19 pandemic: Lighthouse Laboratories and Mega-labs

Covid testing

At the start of the Covid pandemic, a number of 'Lighthouse Laboratories' were set up in addition to, and in most cases independently of, NHS laboratories, in order to carry out Covid testing. The majority of these facilities are provided by the private sector. As discussed in Section 2 of this report, there was no requirement for these laboratories and their staff to be regulated, leading to concerns regarding the quality and safety of the services provided. There was no facility for the IT links so essential not only for safe and effective patient care, but also for effective Track and Trace services at local level.

Numerous NHS laboratories, including the Coventry and Warwickshire Pathology Service, already had the facilities, expertise and existing accreditation to provide molecular testing. [endnote 6] This was extended at the beginning of the pandemic to include Covid-19 PCR testing within hospital environments. These laboratories could therefore, with some investment, have provided comprehensive community Covid-19 testing. Results would have been entered into the Laboratory Information Management System (LIMS), with automatic upload to each patient record in the relevant hospital system, (detailed in Appendix C) which is accessible by hospital staff and GPs providing patient care. Reports could also have been submitted electronically to the patients' GPs from the LIMS. It would have been relatively simple to provide local Track and Trace services with timely notification of all positive tests, to include patient demographics from the NHS patient database, to include addresses. Such notifications from the national Track and Trace system provided by Serco have been delayed and often lacking the necessary information for effective local control measures to be implemented in a timely manner.

Results from the Lighthouse Laboratories do not reach the patient's record, their GP or their local Track and Trace services.

Mega Laboratories

In November 2020, Matt Hancock, Secretary of State for Health, announced that two new 'mega laboratories' would be opening.

Press Release 16th November 2020

*'Two new very high throughput laboratories will open in early 2021, cementing the UK as a world leader in diagnostics and creating up to 4,000 jobs
Both labs, the first based in Leamington Spa and the second in Scotland, will add 600,000 of daily testing capacity altogether when operating at full capacity, meaning faster turnaround times for test results
These new labs form a key part of the UK's national infrastructure to respond to future epidemics as well as adding diagnostic capacity for other critical illnesses, including cancer'* [endnote 2]

It is unclear how Mr Hancock expects turnaround times to be improved, as these are strictly monitored within NHS laboratories, the majority being measured in hours. The main delaying factor is in transport of the specimen to the laboratory, not in the actual testing and reporting. This is of course not a factor for requests generated within the hospital environment such as Emergency Departments and hospital wards.

UKAS, the UK's National Accreditation Body, has made its position clear:

'Matt Hancock, the Secretary of State for Health and Social Care, has said that during the Covid-19 pandemic, good quality testing can help provide us with certainty and is a big part of how we're going to

defeat this disease. Consequently, helping laboratories deliver high quality, reliable tests is a priority for UKAS.

While the government has encouraged the rapid expansion of Covid-19 testing methods and capacity during the pandemic, this cannot be at the expense of ensuring the quality of the results. Recently, it has often been said that a bad test is worse than no test. It is, therefore, vital that all aspects of any new test methods and procedures are rigorously evaluated and verified if patients, regulators, and the public are to trust them. By assessing the technical competence of laboratory staff and the facilities, equipment and testing methods used, accreditation helps generate confidence in the quality and reliability of test results'. [endnote13]

'Accreditation introduces a vital level of quality assurance to the testing process and demonstrates the ability of a laboratory to perform valid test procedures and provide reliable results. This means regulators, patients and clinicians can have confidence that accredited testing services are delivered with the highest levels of competence, quality and reliability. For medical laboratories, accreditation ensures the competence of the whole process, including pre- and post- examination activities, such as diagnosis and interpretation by clinicians. [endnote13]

'To date, around a dozen laboratories across both the public and private sector have been accredited by UKAS for Covid-19 diagnostic testing. An updated list of these businesses and organisations can be found by searching for the phrase "SARS CoV- 2" on the UKAS website ([ukas.com](https://www.ukas.com))'. [endnote 13] See Appendix A

Neither the Lighthouse Laboratories nor the Leamington Spa mega-lab appear under this search. It appears they are not accredited.

The laboratory in Leamington Spa is currently advertising posts and recruiting. Staffing is expected to reach 2000 in time. This equates to the number of staff required to provide all Pathology testing and services for an area some four times the size of the Coventry and Warwickshire area. Salaries are in excess of those paid within the NHS.

There are no jobs advertised for Biomedical Scientists, a title which is protected for use only by individuals who are State Registered, and therefore regulated by, the Health and Care Professions Council. The laboratory is instead using titles such as 'Senior Laboratory Technician'. [endnote14]

The person specification includes '*Experience of maintaining documents and procedures within laboratory accreditation specifications (ISO15189:2012 / ISO17025:2019) is preferred*', [endnotes 12,14] which suggests the laboratory may operate in accordance with the standard, but it is not clear whether it will seek UKAS accreditation.

The Senior Laboratory Technician role [endnote14] does not require applicants to have a degree in Biomedical Sciences, or to be State Registered with the HCPC. Earlier versions of the job advertisements contained the following wording, though this has disappeared from later versions:

'...the following education and experience are also desirable but not mandatory:

Education:

- *Degree in Biomedical Sciences*
- *HCPC registered*
- *PhD or significant experience of problem solving in a lab environment'*

Although it is likely that a number of the successful applicants will be recruited from NHS laboratories and therefore suitably qualified, this is not mandatory. The skilled jobs in the Leamington laboratory are not restricted to state registered Biomedical Scientist as NHS staff are, therefore, the staff could be unregulated.

(For further detail refer to Appendix B)

Accreditation and Standards within NHS Laboratories

'Pathology services work in a highly regulated environment that aims to ensure that laboratories provide a safe working environment for staff and are capable of delivering a consistent, accurate and safe service to patients.

Although the UK Accreditation Service (UKAS) is the main vehicle for accreditation, the Medicines and Healthcare products Regulatory Authority (MHRA), Health and Safety Executive (HSE) and Human Tissue Authority (HTA) impact on laboratory work.' [endnote 11]

NHS Laboratories are accredited by UKAS in accordance with ISO 15189:2012 which specifies requirements for quality and competence in medical laboratories.

'ISO 15189:2012 can be used by medical laboratories in developing their quality management systems and assessing their own competence. It can also be used for confirming or recognizing the competence of medical laboratories by laboratory customers, regulating authorities and accreditation bodies.' [endnote 12]

'Accreditation determines the technical competence and integrity of organisations offering testing, inspection, calibration, verification and certification services (collectively known as conformity assessment). In short, UKAS 'checks the checkers'. [endnote 17]

Staff Training, State Registration and Regulation within NHS Laboratories

NHS Laboratory employees include Doctors, Clinical Scientists and Biomedical Scientists, in addition to ancillary staff such as Biomedical Assistants who work under the supervision of the qualified and regulated staff.

Qualified NHS staff providing patient care / services (Doctors, Nurses, Radiographers, Physiotherapists etc) must be State Registered by the relevant regulatory bodies such as The General Medical Council, the Nursing and Midwifery Council, and the Health and Care Professions Council (HCPC). Biomedical Scientists are regulated by the HCPC.

Biomedical Scientists – ‘Complete complex tasks according to strict protocols (SOPs). Using technology, knowledge and expertise to perform and report on quality assured tests. Training and competence meets the requirement of the Health & Care Professions Council (HCPC) and professional bodies such as the Institute of Biomedical Science (IBMS)’ [endnote15]

Training and Continuing Professional Development

Neither doctors nor Allied Health Professionals (which include Biomedical Scientists) emerge from university fully trained and skilled. Rigorous and extensive training, experience and competency assessment is essential for clinical practice, accompanied by the Continuing Professional Development demanded and regulated by the professional and state registration bodies.

Health and Care Professions Council (HCPC)

The HCPC set standards for professionals’ education, training and standards, and takes action if these standards are not met. This can include removal from the Register. Continuing Professional Development is monitored.

‘You must meet all the standards of proficiency to register with us and meet the standards relevant to your scope of practice to stay registered with us... If your practice is called into question we will consider these standards (and our standards of conduct, performance and ethics) in deciding what action, if any, we need to take.’ [endnote16]

‘For those providing a service for the National Health Service the HCPC is the regulatory body responsible for setting and maintaining standards of professional training, performance and conduct of the healthcare professionals that it regulates, including those practising under the protected title of ‘biomedical scientist’. The United Kingdom Accreditation Service (UKAS) externally audits and accredits public and private pathology laboratories against defined standards of practice. The Institute strongly recommends that all laboratories should be accredited in order to provide and ensure a high-quality, safe service.’ [endnote15]

The term “Biomedical Scientist” is a protected title and refers only to those registered with the HCPC.

Registrants must meet the HCPC standards to be able to practise lawfully, safely and effectively.

**IT Connectivity:
How NHS Pathology Services provide accurate, timely diagnostic
results to clinicians providing clinical care**

Once quality controlled test results are validated, they are entered into the Laboratory Information Management System (LIMS). A large majority of these results are generated and automatically downloaded from automated analysers. Results, some of which include clinical interpretation, are transmitted from the LIMS directly into the patient records on the hospital system and, where required, via electronic links to GP systems. Results requiring urgent attention and potential intervention into patient care may also be communicated by telephone. Results from these systems, along with other essential diagnostic information such as X-ray results, are accessed by the various Medical Clinicians (including GPs) and Allied Health Professionals responsible for the patient's ongoing care.

Hospital systems, such as the Clinical Results Reporting System (CRRS) and the Integrated Clinical Environment (ICE), include access not only to pathology results but also to Radiology results (X-rays, Scans etc), other hospital diagnostic tests such as Endoscopy, and clinical letters. This enables seamless interaction allowing those delivering clinical care to access results and communications as required – effectively a 'One Stop Shop'. Requests from GPs and hospital-based clinicians are increasingly submitted electronically using these systems.

'Robust IT connectivity is vital to any laboratory to ensure that results are submitted to the appropriate clinician and to allow careful follow up of results. The information generated by laboratory IT systems also provides vigorous, evidence-based data – which is what we should be using to inform decision making and strategies as the country eases out of lockdown.

The lighthouse laboratories in England have failed to deliver robust data and, although links with NHS laboratories have started to emerge, the data flow is still stilted with many manual checks and conversions required. Links with clinical systems are still poor and the data generated raises more questions than it answers. In contrast, IT connectivity has always been a strength of the NHS laboratories where biomedical scientists have decades of experience with data integration ensuring the entire pathway of every sample is recorded and making sure results are immediately communicated to the responsible clinicians.

Models exist within the UK that must be considered before a commitment to additional lighthouse laboratories. All COVID-19 results in Wales have been entered into NHS IT systems and this has provided a strong database of results and impressive turnaround times for reporting. NHS Scotland has established "node laboratories" which are collaborations between hospitals and universities. These laboratories are run as extensions of existing NHS laboratories and all results are entered onto the NHS systems.' [endnote 8]

The Lighthouse Laboratories report Covid-19 results directly to the patient, often via text message. The patient's GP is not informed and there is no entry into accessible patient records.

References

1. <https://www.leamingtoncourier.co.uk/health/coronavirus/leamington-selected-location-one-two-new-uk-covid-19-testing-mega-labs-it-could-create-2000-jobs-3036573>
2. <https://www.gov.uk/government/news/two-new-megalabs-to-open-in-2021-to-transform-the-uks-diagnostic-facilities>
3. <https://healthcampaignstogether.com/flip/NB03/NewsBulletin-03.html#p=2>
4. <https://lowdownnhs.info/analysis/nhs-lab-network-undergoes-rapid-private-expansion-amid-performance-issues>
5. <https://www.uhcw.nhs.uk/gps-and-referrers/pathology-services>
6. <https://www.uhcw.nhs.uk/download/clientfiles/files/CWPS%20Handbook%20V11%20Feb%202020.pdf>
7. <https://www.jobsatuhcw.co.uk/clinical-support-roles/pathology/>
8. <https://www.ibms.org/resources/news/lighthouse-lab-expansion-will-compound-data-issues/>
9. <https://www.ibms.org/about/about-ibms/>
10. <https://lowdownnhs.info/news/its-vital-megalabs-have-an-appropriate-skill-mix-ibms/>
11. <https://www.rcpath.org/uploads/assets/4c73cb92-92cb-43fa-9e6098a17c0ea2ce/PathologyRegulationFinal-002.pdf>
12. <https://www.iso.org/standard/56115.html>
13. <https://www.ukas.com/wp-content/uploads/2021/01/covid-article.pdf>
14. <https://www.ttlaboratoryjobs.com/jobs/royal-leamington-spa>
15. <https://www.ibms.org/resources/documents/good-professional-practice-in-biomedical-science/good-professional-practice-in-biomedical-science-web.pdf>
16. <https://www.hcpc-uk.org/standards/standards-of-proficiency/biomedical-scientists/>
17. <https://www.ukas.com/about-us/our-governance/>