Pharmaceuticals & Biotechnology

Source: Refinitiv

Market data	
EPIC/TKR	-
Latest funding	2020
Price	1,221p
Shares in issue	145.3
Pre-money valuation range	£25m-£30m
Net cash/(debt)	£3.0m
Target IPO raise	£5.0m
Target market	AIM

Description

LML is a London-based independent clinical testing specialist and provider of pathology diagnostics services. From its dedicated, state-of-the-art laboratory, near Battersea Park, LML offers the latest in pathology testing solutions across many disciplines, including biochemistry, immunology, haematology, sexual health screening and molecular biology.

Company information

CEO	Seth Rankin
COO	Flavia Araujo-Rankin
CFO	Quentin Ingham
CSO	Quinton Fivelman

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Key shareholders

S. Rankin	30.2%
F. Araujo-Rankin	30.2%
P. Grundy	12.1%
R. Johnson	4.8%

Diary

4Q'21	IPO

Analyst

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LONDON MEDICAL LABORATORY

Testing the market…clinically speaking

London Medical Laboratory (LML) is a London-based independent clinical testing specialist and provider of pathology diagnostics services. Through its vertically integrated laboratory service, its long-term goal is to establish a network of partners and healthcare professionals (HCP) to make blood tests readily accessible to individuals. Meanwhile, LML adapted rapidly in 2020 to take advantage of the COVID-19 testing opportunity, which transformed the company into a profitable and cash-generative operation. LML is growing fast and taking market share in the fragmented £700m (non-NHS) private clinical laboratory market in the UK.

- **Strategy:** LML has a dedicated state-of-the-art laboratory, which currently has the capacity to run 8,000 tests per day. Given the pressure on general practitioners (GPs), coupled with individuals taking a greater interest in personal health and wellbeing, LML aims to establish a strong network for private tests.
- **Growth:** Although there is some uncertainty about how long COVID-19 tests will be required, which is reflected in forecasts, LML looks set for a CAGR in sales of ca.36% over the next five years, boosting profit and cash generation. This rate of growth could be accelerated with additional cash from its proposed IPO.
- **Valuation:** The closest peer is MyHealthChecked (MHC.L), which trades on an EV of ca.£14m. However, LML's sales are 1.8x higher than MHC's and LML is more profitable and cash-generative. Against a weighted-average peer group, at the mid-point of the valuation range, LML would be at a significant discount.
- **Risks:** In 2020, COVID-19 tests represented 99% of group sales. Although there is a downward trend, COVID-19 tests will remain important for the next three years, while LML expands its pathology service. It is possible that expansion of its blood-testing service will take longer and require greater investment.
- **Investment summary:** LML is very well-positioned in the rapidly growing private clinical laboratory testing market in the UK. Research strongly indicates that COVID-19 tests will be essential for at least another 18-24 months. The mid-point of the proposed pre-money valuation range indicates a large discount on both EV/sales and EV/EBITDA compared with the weighted average of its peers, suggesting that there is scope for considerable post-IPO upside.

Financial summary and valuation

Year-end Dec (£m)	2020	2021E	2022E	2023E	2024E	2025E
Sales	12.6	26.5	28.4	34.2	41.6	54.6
Gross margin (%)	*49.7*	*53.0*	*56.0*	*61.0*	*63.0*	*65.0*
Operating costs	-2.6	-10.1	-8.5	-9.9	-11.6	-14.7
EBITDA	3.7	4.3	7.8	11.4	15.0	21.2
Underlying EBIT	3.6	4.0	7.4	11.0	14.6	20.9
Statutory EBIT	3.6	3.0	7.4	11.0	14.6	20.9
Statutory PBT	3.6	3.0	7.5	11.1	14.8	21.1
Underlying EPS (p)	2,160	2,212	3,527	5,236	6,971	9,932
Net cash/(debt)	3.8	8.3	13.3	21.6	32.6	49.2
Equity issues	0.1	5.0	0.0	0.0	0.0	0.0
EV/sales (x)	2.02	0.96	0.90	0.74	0.61	0.47
EV/EBITDA (x)	6.82	5.94	3.27	2.24	1.70	1.20

Source: Hardman & Co Life Sciences Research

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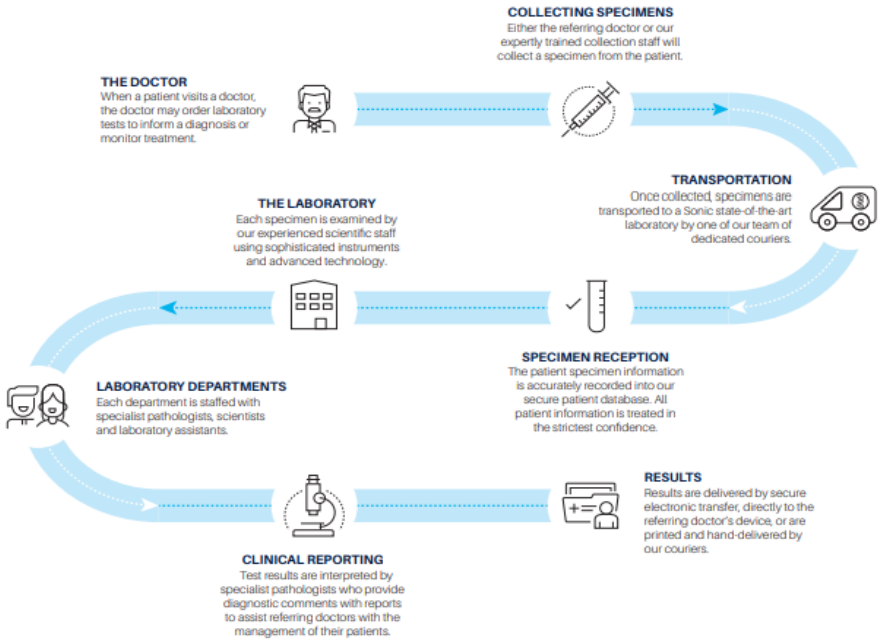
Executive summary

Vertically integrated laboratory for rapid pathology testing service for corporate, healthcare providers and individuals

LML was incorporated in 2016 to exploit the opportunity to provide a rapid pathology testing service in the near term for medical professionals and healthcare providers, while it develops a service in the medium and long term for the general public, which is increasingly taking greater responsibility for personal health and "wellness". It is establishing the latter by direct-to-consumer (DTC) activity via a national network of high street shops and pharmacies and with home-testing kits available from its website. Meanwhile, tests are being ordered by corporate clients and via business-2-business (B2B), which is getting stronger through new contracts. The traditional model for the clinical testing process is shown in the following graphic.

Traditional clinical laboratory process

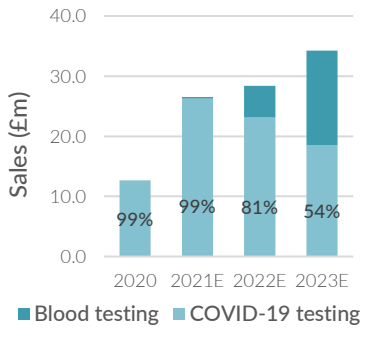


Source: Sonic Healthcare

Market disruptor taking both a traditional and a DTC approach

While LML is also using this traditional model where tests are ordered by a doctor, it is additionally acting as a market disruptor through the development of the DTC opportunity. As the workload on GPs increases, LML is taking advantage of the trend for individuals to take greater responsibility for their own wellbeing and healthcare. Key to LML's long-term growth strategy is the continuous development of the DTC opportunity for both blood tests and infectious diseases. To this end, LML currently has three owned walk-in shops/collection centres in London (Putney and Kings Cross) and Oxford. Also, it has five franchises in Guildford, Epsom, Leicester Square, Wembley and Slough. All of these are open seven days a week and at times that are more suitable for people in employment and who do not want to take time off work.

Sales progression



Source: Hardman & Co Life Sciences Research

Transformational event

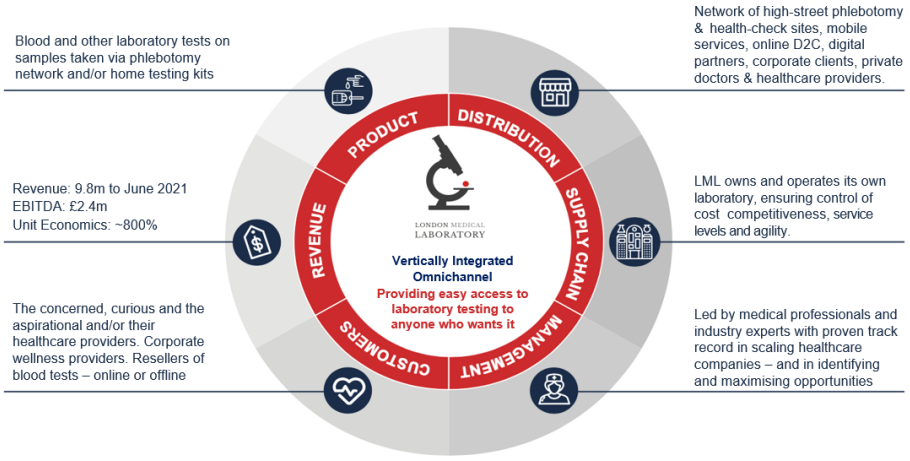
In 2020, the COVID-19 pandemic provided an unexpected opportunity for the company to grow revenues, reach profitability and generate cash. At the time of writing this report, revenues and profits from COVID-19 testing are continuing to grow and this looks set to continue for the next 18-24 months with demand for testing likely to come from several sources. This is providing a buffer for LML, allowing it to build up its infrastructure and relationships for its rapidly growing pathology testing business, which has better long-term prospects and carries higher margins. At some point, the COVID-19 testing service is likely to ease off and be overtaken by LML's core blood-testing service.

Business model

Multiple providers of home testing kits covering numerous conditions and healthcare risks

The UK is a unique situation where blood tests are usually undertaken at a doctor's request via the NHS, free of charge. However, as more individuals are taking responsibility for their own health and wellbeing, so the need for an "at-home" medical testing service is increasing. A quick search of the internet will generate a host of hits for companies offering clinical testing services, through which an individual can have many conditions and health risks identified. The availability of these tests, together with the issues surrounding "at home" testing, were excellently summarised in an article published in *The Times*[1] on 7 August 2021.

Overview of business model



Source: LML corporate presentation

Being vertically integrated, LML's USP is a one-stop complete package for customers

LML is one of the few companies in the UK that can offer a vertically integrated clinical testing service, providing clients and customers with a one-stop solution. This unique selling point (USP) is particularly attractive to corporate clients that are seeking a complete package to avoid them having to employ, directly, people with the relevant skillsets – e.g. phlebotomists. Consequently, LML is seeing a big increase in activity from B2B clients, particularly in relation to COVID-19 testing – e.g. universities looking to outsource the regular testing of students.

Commercial opportunity

Entire UK clinical testing market estimated at £6.6bn…

The entire clinical testing service market in the UK was estimated recently by one of LML's main competitors, SYNLAB AG (SYAB.DE), to be worth £6.6bn (stated as €7.5bn[2]) in 2019. However, much of this is dominated by the NHS directly, through its hospitals and clinical laboratories, so the market available to the private sector is only a small fraction of this.

…but dominated by the NHS facilities

Hardman & Co estimates the private segment of UK market was worth £700m in 2020…

Using a top-down approach based on sales data quoted in the public domain by various companies, Hardman & Co estimates that the private clinical testing market in the UK was worth £700m in 2020, with the leading operators being the multinational operators, Sonic Healthcare (Sonic; SHL.AX) and SYNLAB, with 41% and 12% market share, respectively. Driven by COVID-19 tests, we estimate that LML had 1.8% share. However, despite these two large players, the UK market is highly fragmented, with a particular geographical bias to London and surrounding counties. In our opinion, this will provide LML with opportunities to expand its national presence and accelerate growth in the future.

…with LML taking 1.8% market share

[1] Can DIY medical kits transform Britain's health? By Harry Wallop & Charlie Gowans-Eglington in the *The Times*, 7 August 2021.
[2] SYNLAB AG IPO prospectus

Financial summary

In 2020, 99% of sales came fromCOVID-19 testing...

...but there is an upward trend in sales for pathology tests...

...giving a five-year CAGR of ca.34%

In 2020, sales were dominated (99%) by tests for COVID-19 and this has continued into 2021. On the one hand, this is very good news for LML, as it is generating profitable business and generating cash. This is enabling the company to invest in the development of its long-term, core, pathology business, which is expected to become an increasing contributor to sales and profits in the future. On the other hand, though, there is a question mark over the sustainability and longevity of COVID-19 testing. However, our own analysis (see page 21) suggests that the need for COVID-19 tests will continue for at least the next 18-24 months due to travel requirements and for occupational health needs. This view has been backed up recently by Sonic in its fiscal 2021 results statement and presentation. Consequently, even though there is expected to be a rebalancing of the mix of business, sales at LML are forecast, conservatively, by Hardman & Co to increase at a CAGR of 34.1% over the next five years (2020-2025).

Currently, LML generates about one-third of its sales from each of the following:

- **B2B clients:** Testing for occupational health purposes, e.g. actors and film crews daily during the making of films; universities testing all their students.
- **Corporate clients:** Partnerships (e.g. Patient Access) and HCP, including pharmacies and dentists, sending in samples for analysis.
- **Customers:** Directly via shops, franchises and the website (some B2B business also comes directly via the website).

LML is profitable and cash-generative...

...with the capacity to accelerate growth post-IPO to give EBITDA CAGR of 41.5%

The business is both profitable and cash-generative. Following recent investment in additional instrumentation, personnel and the website, together with the likely change in the sales mix towards higher-margin pathology testing, the rate of profit growth is forecast to accelerate, generating forecast five-year CAGR for EBITDA of 41.5%.

Given that LML is cash-generative, the board is seeking to raise only a modest sum (up to £5m) at IPO, which will be used for business development and to accelerate the rate of acquisition of new customers – corporate partners, pharmacies and dentists, patients directly – which, in turn, will accelerate the rate of growth.

Valuation

Comparison with MyHealthChecked

MHC has a very similar business model, providing a valuation benchmark...

...but LML has progressed at a faster rate

MyHealthChecked (MHC.L) has been identified as the closest listed entity to LML. First, it is developing a clinical testing market, albeit targeted towards female health. Secondly, it quickly adapted to benefit from the COVID-19 testing opportunity in 2020 in order to generate short-term sales. A summary of the performance of the two companies can be seen in the following table. Although both companies had similar starting positions, we have concluded that LML has advanced sales at a much faster rate than MHC. However, both companies have become profitable and cash-generative in the process, thus providing a benchmark for valuation.

LML compared with MHC

Year-end Dec	------- MHC -------		-------- LML --------		LML vs MHC
(£m)	2020	2021E	2020	2021E	Δ 2021E
Sales	0.05	15.00	12.51	26.52	+77%
EBITDA*	-2.80	1.50	3.74	4.30	+2.80
EBIT*	-2.96	1.25	3.64	4.00	+2.75
Operational cashflow	-2.19	6.20	4.34	1.60	-4.60
Gross cash	0.47	4.00	4.18	8.65	
Net cash/(debt)	0.36	4.00	3.82	8.29	
Market cap		18.13			

**Underlying (excludes exceptional items)*
Source: Hardman & Co Life Sciences Research

Mid-point of the valuation range would put LML on significant discount...

...suggesting scope for upside potential

Peer group analysis

A group of six listed companies has been compiled, that are either large multinational companies with significant UK clinical laboratory operations or UK businesses focused on *in vitro* diagnostics (IVD) that have been opportunistic with respect to COVID-19 tests (see page 36). In order to minimise the influence of small company "outliers" from our averages, comparisons have been made on a weighted-average basis.

For comparative purposes, all the numbers in this document are based on a pre-money valuation for LML of £27.5m, which represents the mid-point of an assumed £25m-£30m range.

Valuation – peer group comparison

Based on 2021E	Range	Weighted average	LML	LML relative to peers
EV/sales (x)	0.83 to 3.86	1.92	0.91	-52%
EV/EBITDA (x)	3.13 to 28.70	6.85	3.86	-44%

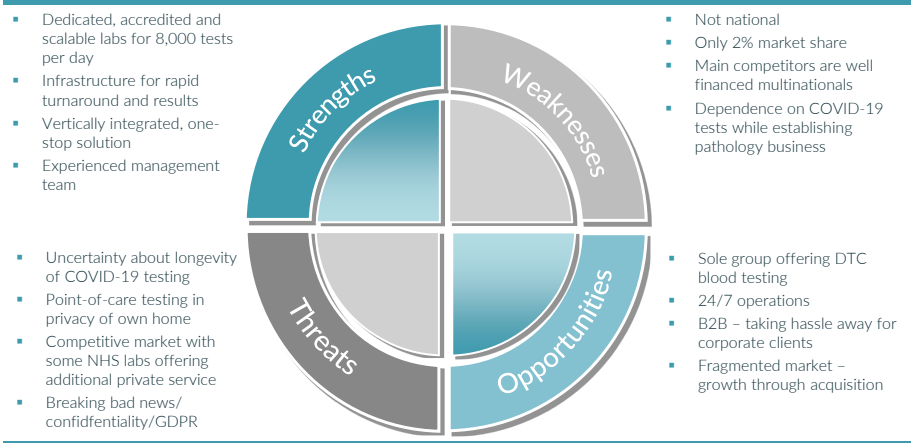
Source: Hardman & Co Life Sciences Research

Based on forecasts for the next reporting period (not all the peer companies have the same period end) and the assumed pre-money valuation of LML, it is clear that there is considerable scope for upside in LML provided that the company delivers on our forecasts, trading at a 52% discount based on EV/sales and a 44% discount on EV/EBITDA, with faster growth. Although the numbers are not shown in the table above, the discounts are even higher using 2022 forecasts.

SWOT analysis

A summary of the strengths and weaknesses of LML is provided in the following chart:

SWOT analysis



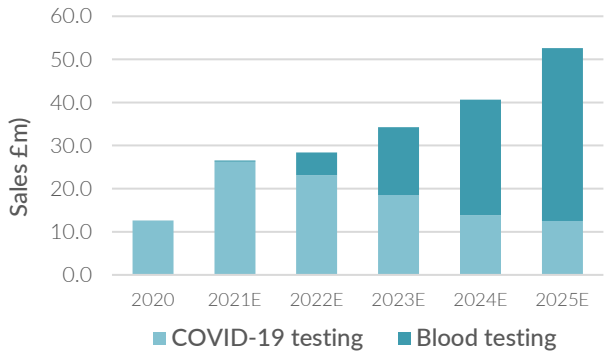
Source: Hardman & Co Life Sciences Research

Investment conclusion

Interesting opportunity in a fast-growing market

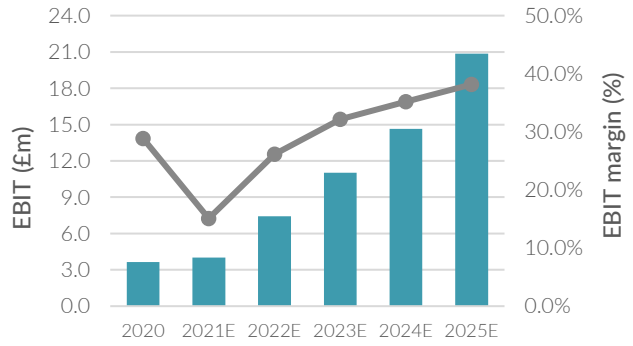
In our opinion, LML represents a very interesting investment opportunity. The strategy for developing its core pathology business is sound. Meanwhile, management has been quick to establish a significant COVID-19 testing business which has made the company profitable and cash-generative. Although there are some understandable concerns about the longevity of COVID-19 testing, the market should be reassured that LML's main competitor recently stated that testing capacity will be needed for a further 18-24 months. The mid-point of the proposed pre-money valuation indicates a large discount on EV/sales and EV/EBITDA compared with a weighted average of its peers, suggesting there is scope for considerable upside in the event that the company lists successfully on AIM.

Sales analysis



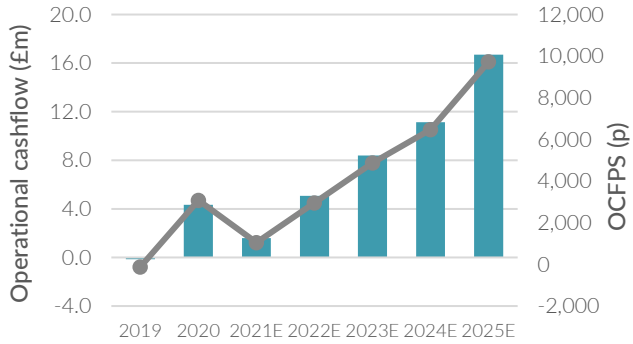
- In 2020, 99% of sales were derived from COVID-19 tests.
- Trend is for pathology tests to generate a greater proportion of sales in the future.
- Sales are derived from B2B, corporate clients, partnerships and DTC.
- Forecast five-year CAGR of 34.1% for sales.

EBIT and EBIT margin



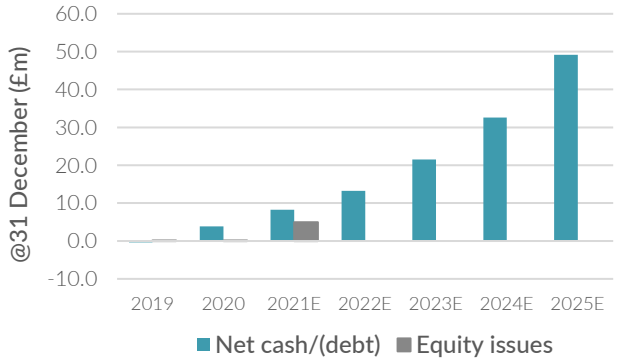
- LML was profitable in 2020 with and operating margin of 28.9%.
- Operating margins are expected to rise through test volume efficiencies of scale and higher-margin blood tests.
- Some of the IPO funds likely to be used for investment to accelerate the rate of profit growth.
- Forecast five-year CAGR of ca.42.0% for EBIT.

Operational cashflow and OCFPS



- The COVID-19 opportunity helped LML to become cash-generative in 2020.
- Investment in personnel and marketing, together with staff bonuses, will reduce free cashflow in 2021, after which there is rapid acceleration.
- Surplus cash could be used to expand facilities and add analytical instrumentation to expand growth.
- Prior to IPO, there is likely to be a share split, which will alter the EPS and OCFPS calculations.

Net cash/(debt) and equity issues



- Very strong balance sheet with gross cash at 30 June 2021 of £3.4m, even after high 1H'21 investment.
- Since inception, only £0.42m of capital has been invested into LML.
- The only financial liabilities in LML are for leases on its HQ and laboratory facility.
- New funds raised at IPO are expected to be only modest at up to £5.0m.

Source: Company data; Hardman & Co Life Sciences Research

History and strategy of LML

Background

LML is an independent medical laboratory established to provide medical professionals, healthcare providers and the general public with rapid analysis of samples – blood, urine, sputum etc. – from the body for diagnostic, forensic and wellbeing purposes.

The UK population is very cognisant that these services are provided free of charge, but paid for through taxation, via the NHS. However, pressure on the NHS in the post-COVID-19 environment, increased awareness of personal wellbeing and a more cosmopolitan population are all driving the trend towards taking responsibility for one's own health and paying for tests to be done privately. LML is the only/one of very few laboratories that can provide this service direct to consumers.

Purchase of analytical instruments

Following incorporation in 2016, LML quickly found suitable premises in Battersea, London, which it equipped with three "gold standard" types of analytical instrument in 2017 on which it analyses the samples:

- **Abbott Architect:** ARCHITECT is the flagship system of Abbott Diagnostics Total Solution offering that enhances productivity and provides users with high confidence in clinical results. It is scalable through the addition and integration of extra units making it suitable for growing businesses.

Abbott Architect

Source: LML

- **Abbott Emerald:** The CELL-DYN Emerald haematology analyser offers high performance in an affordable, compact design that provides reliable and accurate patient results every time. Suitable for a small laboratory and capable of generating results in 65 seconds.
- **Cepheid GeneXpert:** GeneXpert is the cornerstone product of Cepheid's molecular testing system based on single-use cartridge technology. It offers a comprehensive menu of FDA-approved tests on a single, fully scalable, workstation, allowing workflow flexibility and 24/7 testing accuracy.

Abbott CELL-DYN Emerald

Source: Abbott

GeneExpert IV

Source: Cepheid

Following installation, validation, training and an assessment of quality control, LML was able to offer a tailored package of testing services from the end of 2018 and embarked upon a programme of building market awareness, initially piloting the provision of laboratory services to private doctors in London.

Sysmex XN-1000

Source: Sysmex

In late 2020, LML expanded its capacity and capability by a adding a Sysmex XN-1000 instrument. This is Sysmex's flagship benchtop analyser and is used typically for full blood count analysis – number and size of red blood cells (oxygen carry capacity), white blood cells (fight infections) and platelets (play a major role in blood clotting).

Implementation of a laboratory management system

In September 2019, LML installed a Laboratory Information Management System (LIMS) to optimise the efficiency of its laboratory and link seamlessly through the digital ordering of tests and results from reference laboratories, allowing LML to report sub-contracted or overflow test results in the same way, and within the same timeframes, to customers as if they had been performed in its own laboratory. LML also began to pilot its DTC testing services through pharmacies and home testing kits – both online and as an off-the-shelf product.

The COVID-19 opportunity

The unexpected advent of COVID-19 which led to the first lockdown in the UK in March 2020, provided LML with an extraordinary opportunity. Recognising that it had the relevant expertise and experience, the company swiftly added a range of COVID-19 tests to meet the overwhelming demand.

COVID-19 was a transformational opportunity for LML

This was a transformational point in the company's short history, dramatically increasing revenues and becoming profitable and cash-generative. Despite this rapidly changing marketplace, this remains the case today. During the past 15 months, LML has continued to adapt to challenges posed by the coronavirus adding more regulatory approved COVID-19 tests as they have become available. For example, through its strong relationship with Abbott Labs, LML was the first laboratory in Europe to offer Abbott's COVID-19 IgG antigen test and the first private laboratory to offer the Abbott Panbio rapid antigen lateral flow test, providing an important competitive advantage.

Continuous investment

Test volume expansion needs investment in increased staffing and instrumentation

The expansion in testing has been accompanied by an expansion in staffing levels – currently 200 – and further investment in analytical instruments. During 2021, LML will increase throughput, together with its capability and range of services on offer, by adding instrumentation manufactured by Roche (ROG.S) and ThermoFisher Scientific (TMO.N), both major suppliers in the field of medical diagnostics. These new systems will be fully integrated into its LIMS programme.

Current capacity is 8,000 tests per day

LML currently has the capability to process 8,000 blood samples per day. Notwithstanding the extra staff and instrumentation that would be required, LML's existing laboratory facility has sufficient space to increase testing capacity three-fold.

Developing DTC opportunity

Looking to take advantage of greater personal interest in health and wellbeing…

Currently, blood tests are available to the UK population via the NHS, free of charge, albeit paid for via National Insurance contributions and taxes. The process is initiated by a doctor requesting specific tests from a wide range of options that constitute a "blood test". However, the increasing workload on GPs, a more cosmopolitan population and individuals taking greater responsibility for their own wellbeing and healthcare is opening up a new opportunity in private blood testing.

...via walk-in shops, franchises, partnerships and pharmacies

Key to the long-term growth strategy of LML is the continuous development of the DTC opportunity for both blood tests and infectious diseases. LML currently has three owned walk-in shops/collection centres in London (Putney and Kings Cross) and Oxford. Also, it has five franchises in Guildford, Epsom, Leicester Square, Wembley and Slough. All of these are open seven days a week at times that are more suitable for people in employment who do not want to take time off work.

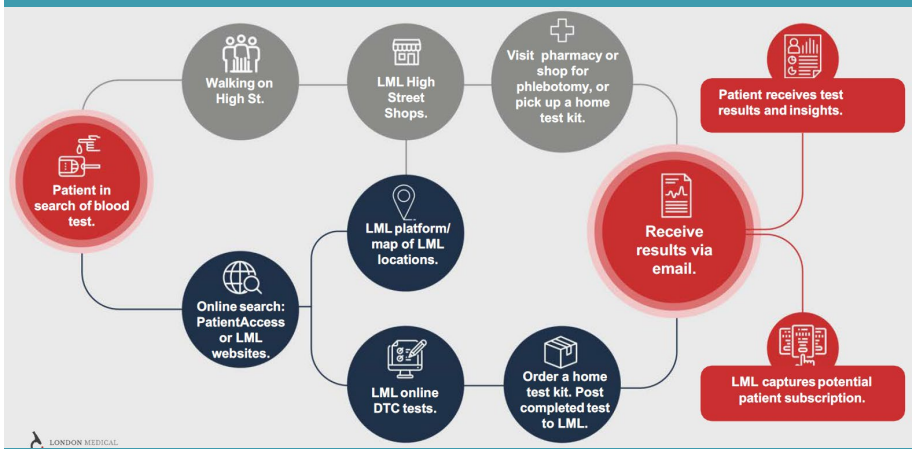
Direct to patient approach

Source: LML corporate presentation

350 pharmacies and 12 dental practices currently signed up

In addition, during the past 12 months, LML has been signing up licensed partners to supply it with samples from tests that these partners have sold to their customers. As at 31 August 2021, it has more than 350 pharmacies, out of a potential 10,600 independent pharmacies – excluding the major chains such as Boots – and 12 dental surgeries. Part of the rationale for its IPO is to significantly expand this network. The aim is to be in a strong position in readiness for the inevitable tailing off of the COVID-19 work, at some point in the future. These partners have been obtaining significant income from COVID-19 and they are expecting to replace this with an increase in blood-testing sales if/when demand for coronavirus testing eases off.

Patient journey



Source: LML corporate presentation

Business model and growth strategy

LML is operating in the fast-growing field of "at-home" medical testing offering a service to the increasing number of people taking responsibility for their own health and wellbeing. Today, through the websites of various companies offering testing services on the internet, an individual can have many conditions and health risks identified. This availability and related issues were elegantly summarised in a recent article in the *Times*[1].

Attractions of one-stop shop available seven days a week

LML is offering most of the same services, but as a one-stop shop. Additionally, it has a phlebotomy service to obtain the appropriate amount of blood for its tests – up to 20ml depending on which product is required – whereas the separate home-test kits available on the internet each require you to take a smaller sample of your blood, usually via a needle prick on your finger, which can cause issues.

Lifestyle

A key driver for LML's pathology service business is personal lifestyle. An increasing number of people are taking more control of their health. Until the COVID-19 pandemic, personal fitness was a major growth business. Although this suddenly stalled, the pandemic has not altered an individual's desire to keep fit and well. Instead, it has forced them to undertake this activity at home rather than at a fitness centre. An extension of this, is a desire for individuals to know the personal risk of a medical problem, either immediate or way into the future, and to question whether a lifestyle change, or intervention, can alter that risk.

Two-thirds of UK population are overweight

Presently, however, in our opinion, the interest of people in personal lifestyle and wellbeing is closely associated with socioeconomic class and education. It is estimated[3] that about two-thirds of the UK population, including children, is overweight (BMI 25-30) or clinically obese (BMI >30) with a very high risk of developing heart disease and diabetes in the future. Yet, those same people often stack their food trollies at supermarkets with large quantities of cheap, "wrong" food, or live off take-away food. People must be educated from an early age regarding the need to eat smaller quantities of quality food and take regular exercise in order to minimise the risk of health problems in the future. However, this does provide significant growth opportunity for LML.

General practitioners

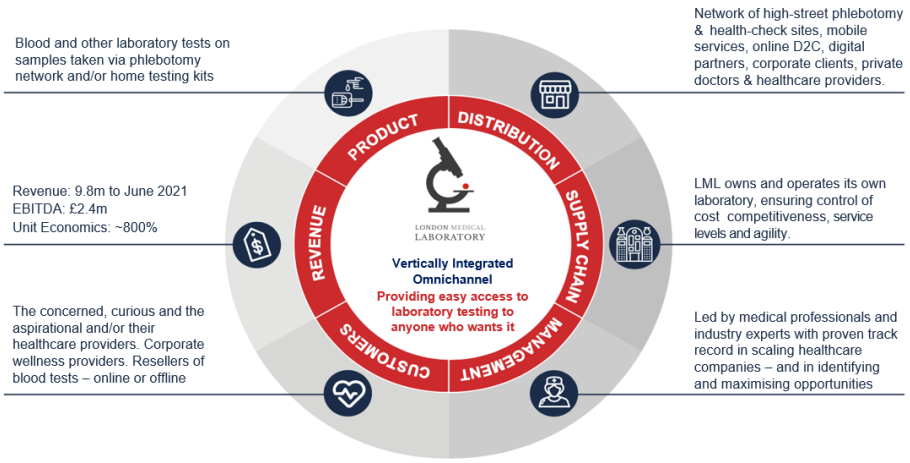
GPs currently overwhelmed by the workload, exacerbated by COVID-19

Although pressures had been mounting well before the pandemic, COVID-19 has undoubtedly exacerbated the problem, resulting in an increased workload faced by NHS GPs, such that they simply cannot cope with the demands on them. If available, patients are allocated a 10-minute appointment. If all goes well, a GP might be scheduled to see 24 patients back-to-back during a four-hour clinic, which is very onerous. However, while some cases might be dealt with quite quickly, others might take much longer than 10 minutes, particularly if it involves breaking bad news to the patient. Should this happen early in the day, subsequent patients in the waiting room see their appointment delayed and when they do eventually see the GP, can be very demanding and want their "money's worth" to compensate for the delay, pushing the GP appointment schedule back even further. Consequently, GPs simply cannot cope with the workload and are constantly "fire-fighting".

Again, this provides an opportunity for LML. Diagnostic testing for COVID-19 has got individuals used to visiting a pharmacy to have a test performed. This has had two effects. First, it has got people used to the idea of visiting a pharmacy to have a health test performed. Secondly, it has speeded up the process of signing-up a network of pharmacies by LML for its pathology testing service. Patients are realising that they can obtain a test at a convenient time, relatively cheaply, without the need to visit their GP or take time off work. In certain circumstances, the cost of this service might be reimbursed by the employer.

[3] 2019 Health Survey for England

Overview of business model



Source: LML corporate presentation

Pathology testing service

Pathology tests are routinely performed on blood, urine, saliva, faeces, body fluids or tissue samples obtained by biopsy for the diagnosis and treatment of diseases and other conditions.

Testing categories

Core focus		Sample
Haematology		Blood Bone marrow biopsy
Biochemistry		Blood Urine Tissue fluids Genetic testing
Pathology	Cytology	Sputum Fluid (cancer cells) Cervical smears
	Histopathology	Histological samples Tissue biopsies
Microbiology and Virology	Infections	Blood, blood culture Urine Body fluids (e.g. ascitic, cerebrospinal)

Source: Hardman & Co Life Sciences Research

Blood tests

Core test central to disease diagnosis, monitoring and screening

One of the foremost tests in medical practice is a blood test, which can be used, among other things, to:

- assess a person's general state of health;
- check for the presence of an infection;
- provide information about the function of key organs, such as liver and kidneys; and
- screen for certain genetic conditions.

In the UK, the usual practice is for blood tests to be requested by a healthcare professional – GP, hospital doctor, dentist etc. The sample will be analysed through an NHS laboratory and, consequently, is available free of charge. HCPs that operate on a private basis will have the samples analysed by a private laboratory and the fee-for-service will be recovered from the payor – patient, employer, health insurance provider. Because of the enormous range of items than can be measured from a blood sample (see tables below), the HCP requests specific items from a menu/panel of options, which can range from the very common (e.g. full blood count (FBC)) to the very rare (e.g. genetic testing).

Urgent tests must be analysed instantly to help clinical decision making

Depending on the specific situation, the HCP may classify some tests as being:

- **very urgent** – where the result is needed in less than one hour; through to
- **routine** – where the result may take 24 hours (e.g. some cancer markers, some viral screens) or even a month (some genetic tests).

Reasons that the HCP might be requesting a blood test include:

- **symptom-related** – a patient has attended hospital/clinic because feeling unwell;

- **long-term monitoring of disease** – e.g. anaemia, cirrhosis, cancer;
- **before and after procedures** – e.g. surgery, biopsy; and
- **asymptomatic screening** – e.g. MRSA, COVID-19.

Tests may also be required as part of a person's employment. Under these circumstances, apart from NHS employees, they would generally be requested by occupational health or an employment screening service and be analysed by a private laboratory.

Most common panel requests

Biochemistry 7

This is also known as blood chemistry, with the basis panel of seven metabolic tests looking at the levels of essential enzymes in the blood. It also checks kidney function. The level of glucose in the blood is obtained through this test, which can indicate if a person needs further testing for diabetes.

Biochemistry 7			
Test	**Indication**	**Normal/target result**	**Result of concern**
Urea (nitrogen)	Kidney function	2.5 to 7.8 mmol/l	
Glucose	Diabetes	<7.0 mmol/l	>8 to 40 mmol/l
Creatinine	Blood pressure	95 to 108 mmol/l	
Sodium	Obtained from food and drink. Levels fluctuate with dehydration or overhydration, diarrhoea, endocrine disorders, trauma and bleeding.	133 to 146 mmol/l	
Potassium	Muscle contraction and cell function – abnormal level causes problem with heart rhythm	3.5 to 5.3 mmol/l	>6.0 mmol/l
Chloride	Dehydration/heart failure	95 to 108 mmol/l	

Source: Hardman & Co Life Sciences Research

Full blood count (FBC)

FBC quantifies the levels of the different cells that make up whole blood, which provides information about whether the body is making the appropriate number of each type of cell. This helps to give an indication about the general health of a person, as well as provide important clues about potential health problems. An abnormal result reflects on signs of iron deficiency anaemia, a current or recent infection, or bleeding and clotting disorders. FBCs are also used after surgery so that the physician can decide if a blood transfusion is warranted, or to evaluate for infection.

FBC		
Test	**Typical indications**	**Normal/target result**
White blood cells	**Low:** bone marrow problems, chemical exposure, autoimmune disease. **High:** tissue damage (burns), leukaemia, infectious diseases, or the use of certain drugs (e.g. steroids).	4.0 to 11.0 x10^9 cells/l
Red blood cells	**Low:** blood loss, problems with the bone marrow, leukaemia, malnutrition. **High:** heart problems, kidney disease, dehydration.	308 to 508 x10^{12} cells/l
Platelets	**Low:** caused by chemotherapy, haemolytic anaemia, cirrhosis. **High:** anaemia, specific types of cancer, recent surgery.	150 to 400 x10^9 cells/l

FBC continued		
Haemoglobin	**Low:** blood loss caused by trauma or surgery; possibly a long-term small bleed in the body, such as a stomach ulcer. It can also indicate an inability to make enough blood, which is often caused by a deficiency in iron, B12 or folate.	115 to 165 g/l
Haematocrit	**Low:** anaemia, blood loss, bone marrow problems, malnutrition. **High:** dehydration, smoking, living at a high altitude and heart disease.	0.36 to 0.46 (36% to 46%)

Source: Hardman & Co Life Sciences Research

Liver enzymes

Liver function tests are performed to determine if this important organ is functioning normally. The tests measure liver enzymes that are released by liver cells when they are damaged for any reason, such as drugs, alcohol, hepatitis viruses. Because the liver plays a role in normal blood clotting, it is essential to know if it is functioning normally prior to a surgical procedure. Elevated numbers can indicate liver damage or poor liver function.

Liver enzymes		
Test	**Indication**	**Normal/target result**
Aspartate phosphatase (AST)	Liver damage	10 to 35 units/l
Alanine aminotransferase (ALT)	Liver damage	10 to 60 units/l
Bilirubin (total)	Abnormal levels cause jaundice	<21µmol/l
Albumin	Low levels indicate acute or chronic liver damage; could be caused by poor nutrition	35 to 50 g/l

Source: Hardman & Co Life Sciences Research

Coagulation panel

These tests look at the ability for your blood to clot. Inability to form clots normally could cause problems during surgery, where the incidence of bleeds is common. In the event that the results indicate impaired clotting ability, it may be necessary to delay surgery to prevent significant bleeding during the procedure. This test can also be used to monitor potentially dangerous blood-thinning medications, such as warfarin where the therapeutic index is very low.

Coagulation panel		
Test	**Evaluation**	**Normal range**
Prothrombin time (PT)	Ability to clot	9 to 16 seconds
Partial thromboplastin time (PTT)	Determines if blood-thinning drugs are effective	30 to 45 seconds
International normalized ratio (INR)	Ensures conformity of PT tests between labs	0.8:1.25 ratio

Source: Hardman & Co Life Sciences Research

Arterial blood gases

Although the measurement of blood gases is important, this is only the case in a hospital situation – intensive care or surgery (before, during and after) – with an analyser close to where the blood sample is taken. It is, therefore, not relevant to LML, but included for completeness.

Unlike most blood tests which use blood taken from a vein, blood gases can only be analysed on a blood sample taken from an artery – typically the radial artery in the wrist – which is fully oxygenated by the lungs. This provides information on the

function of the respiratory system and how much oxygen is being carried in the blood. Abnormal results may indicate that the blood is low in oxygen, that the patient is breathing too much or too little (on a ventilator during the surgical procedure), or has pneumonia. Interpretation of results can be challenging, often requiring the involvement of a specialist.

Arterial blood gases		
Test	**Indication**	**Normal/target result**
pH	Acid/base balance of arterial blood	7.35 to 7.45
pCO_2	Level of carbon dioxide in the blood	
pO_2	How much oxygen is being concentrated in the blood	
HCO_3	Bicarbonate levels may indicate kidney function issues	
O_2 saturation	How much oxygen is available for the tissues of the body to use	>97%

Source: Hardman & Co Life Sciences Research

Genetic testing

Considerable advances have been made in genetic screening and testing over the past 20 years, helped by the ability to accurately and speedily multiply, millions of times, minute amounts of DNA extracted from a blood sample and then analysing for a specific gene mutation. Serious genetic conditions that can be diagnosed this way include:

- **cystic fibrosis** – a condition that causes a build-up of sticky mucus in the lungs;
- **polycystic kidney disease** – a condition that causes fluid-filled sacs called cysts to develop in the kidneys;
- **haemachromatosis** – a genetic condition of iron overload;
- **BRAC1 and BRAC2** – hereditary breast cancer; and
- **lifestyle genetic testing** – increasingly available for endurance predisposition, lactose intolerance, weight gain predisposition

NIPT test

One of the most common genetic tests is the non-invasive prenatal test (NIPT) for pregnant women. The test is performed on a sample of maternal blood extracted after around 10 weeks of gestation and results are available in 3-5 days. The test estimates the risk of a fetus carrying an extra chromosome – cells usually contain 46 chromosomes, 23 from each parent. In some circumstances, all or some of the cells in the fetus contain 47 chromosomes when three copies of a chromosome are present instead of the normal two, which occurs in Down's syndrome (Trisomy 21) and, more rarely, in Edwards' syndrome (Trisomy 18) and Patau's syndrome (Trisomy 13). These tests are now routine, with an accuracy of >99% and negligible (or zero) false positives. These tests tend to be performed and analysed in specialist test labs.

LML offering

LML has a broad menu of tests despite its infancy

As can be seen from the summary of pathology and blood tests discussed above, the menu/panel available to HCP is wide ranging. Given that LML is in its infancy to establish itself in the market as a test service provider, its menu, while still substantial (see page 23), is more limited, focusing on tests more suited to its target population that is interested in:

- personal wellbeing;
- fitness;
- lifestyle; or
- health screening.

With respect to testing for cancer, LML currently only offers one test – "Prostate Profile" – which measures the level of prostate specific antigen (PSA). A high level of PSA could indicate problems with the prostate, which may or may not include prostate cancer. Another observation is the relatively low availability of microbiology testing other than viral tests for hepatitis B, hepatitis C, COVID-19 and human immunodeficiency virus (HIV), all from blood sample and sexually transmitted diseases from a urine sample. Notable omissions are tuberculosis (TB) and methicillin-resistant staphylococcus aureus (MRSA). However, we view this as a future growth opportunity for the company to expand its menu through the addition of more tests.

Potential risks

LML has good clinical advisors and procedures in place to minimise potential risks

LML provides a full service, with most of the tests on offer being performed in-house. We have identified three areas where we believe there are potential risks.

Breaking bad news

In a "normal" NHS situation where blood tests are ordered by a physician, results will be sent back to the requesting doctor and any anomalies will be flagged so that they can be followed up. In potentially serious or fatal situations, the doctor would be spoken to directly so that immediate action can be taken if necessary. However, what protocols are in place where a test performed by LML is requested directly by a patient and has a red flag event? LML has processes in place to handle such an occurrence. However, there is a risk that the patient does not understand the seriousness of the situation and sits on the find for a few days, by which time it might be too late.

In addition, where there is a situation involving the "breaking of bad news" – e.g. identification of cancer – procedures also need to be in place for the patient to receive counselling.

Evolution of point-of-care (POC) tests

Over the past decade, considerable strides have been made with the development of POC tests, the most obvious being a pregnancy test. More and more tests are becoming available that can be performed at home, which are accurate, fast and relatively cheap. Also, they and can be undertaken in the comfort and privacy of a person's home environment, adding to confidentiality. Such tests obviate the need for machine-based testing.

Typical POC tests include:

- pregnancy;
- glucose monitoring for diabetics;
- cholesterol; and
- COVID-19.

Confidentiality/GDPR

Under normal circumstances, the request for a diagnostic test comes from a HCP in liaison with the patient, using a reference number/barcode. Following analysis, the results are sent back to the requesting physician, who will report on the finding to the patient. Under such circumstances with a small number of parties involved, there are limited opportunities for any breach of confidentiality. In circumstances where more parties are involved in the process, the risk of a GDPR or confidentiality breach increases.

COVID-19 testing service

2020 will probably go down in history as one of the most challenging years experienced during our lifetime, but it will also likely be chronicled as one of the best years for the recognition and appreciation of science. As we entered 2020, the COVID-19 pandemic was in its infancy. However, it rapidly evolved through the exponential rise in infections and mortality globally.

Response of life sciences companies to pandemic was significant...

...and this included LML

One positive to emerge from the pandemic was the response of the life sciences sector on a global basis. Many companies, both large and small, stepped up to the challenges posed by the virus through rapid innovation. Notable among these was the development of new diagnostic tests to identify either active virus (PCR tests) or previous exposure (antibody/affirmer tests). Once these had become available, the challenge was to speed up the time to get results; to develop POC tests; and to ensure that tests can identify new variants of the virus.

LML also rose to the challenge, adapting its offering to include a COVID-19 testing service, which has transformed the company.

Tests for monitoring and controlling the spread of coronavirus fall into two categories:

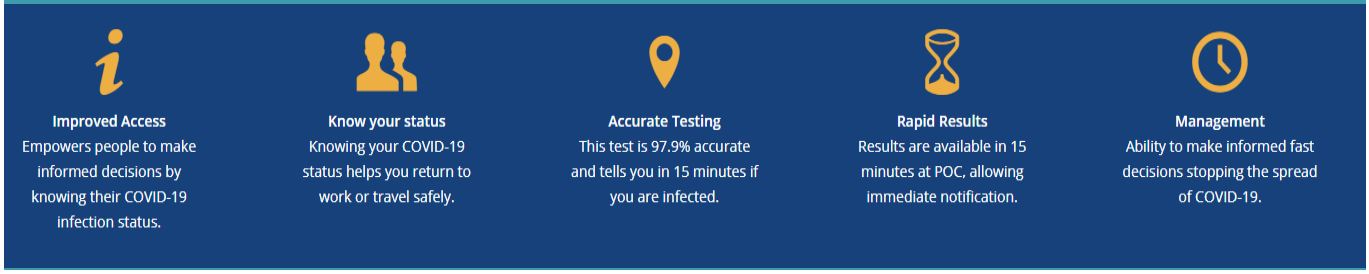
- **Current infection:** Molecular tests using polymerase chain reaction (PCR) technology to detect active virus in a nasal/mucous sample.
- **Past infection and immunity:** Antibody/affimer-based tests on a blood sample to detect if a person has previously had exposure to the virus.

Rapid COVID-19 antigen test

This is a 15 minute POC test that will ascertain if a patient is currently infected with the virus. The core technology is used already to detect a wide range of pathogens, so is robust and found to be accurate. It has been adapted to detect COVID-19 with an accuracy of ca.98%.

This lateral flow test can either be conducted by professionals or performed in the home setting. The back of the throat and the nose of the patient is swabbed and the specimen is then extracted and delivered onto the cassette, where the results will be visible on the test cartridge in about 15 minutes.

Characteristics of rapid COVID-19 antigen test

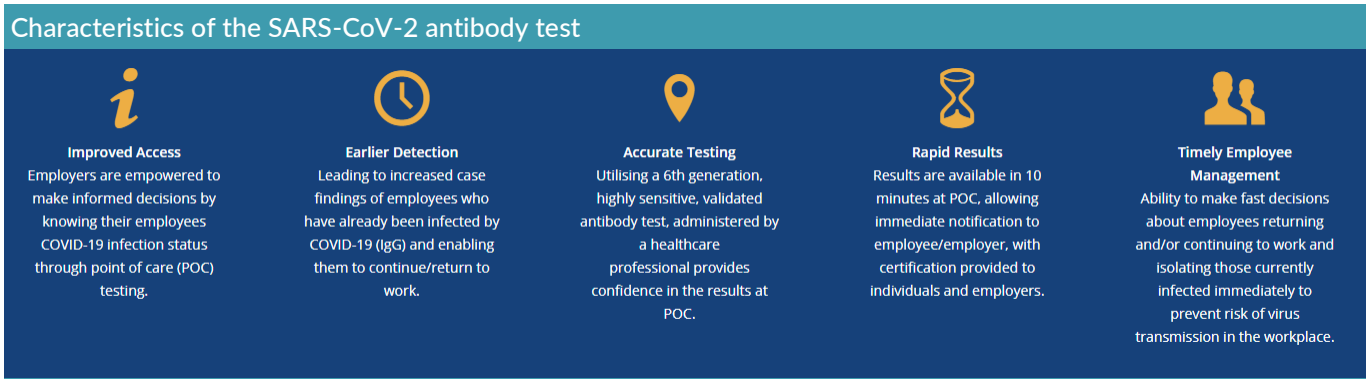


Source: www.rapidcovidtesting.co.uk

SARS-CoV-2 antibody test

The SARS-CoV-2 antibody test is used for the detection of antibodies showing that a person has already been infected by the COVID-19 virus, or vaccinated against the virus. It does not tell you whether the person has active disease. This test is used, for example, by employers wanting to know the status of their employees.

These tests have 98%-99% sensitivity and over 99% specificity. They are performed usually on a finger prick blood sample. Using a lateral flow assay, results are typically available in about 10 minutes. With approximately 90% of the UK adult population having received a first dose of vaccine, and 82% fully vaccinated, an IgG blood test can measure an individual's immune reaction to determine, potentially, immunity to future infection.

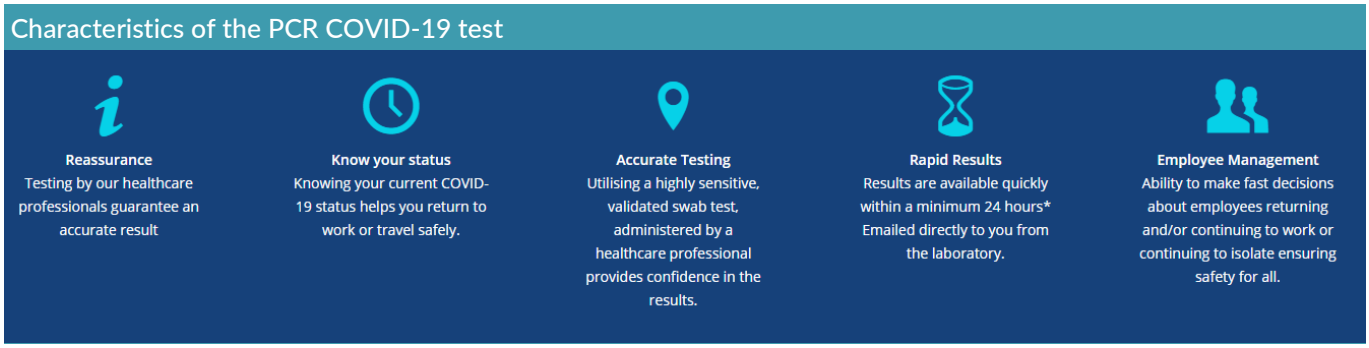


Source: www.rapidcovidtesting.co.uk

PCR test

The PCR COVD-19 test is for early detection of COVID-19 and is performed in a laboratory. It is very accurate – 98% sensitivity and 100% specificity – from the earliest pre-symptomatic stages of infection. It does not show whether you have had the virus previously.

The PCR test is performed on a swab taken from a person's nose and back of the throat, which is sent to a laboratory for analysis.



Source: www.rapidcovidtesting.co.uk

The changing market

Over the past 18 months, the market has changed constantly. Around the time of the first global lockdown, the market for COVID-19 testing was very much in its infancy with few regulatory approved tests. As testing became available, the focus was very much on whether HCPs or unwell individuals had active virus and were running the risk of spreading the virus. As 2020 progressed, the requirement expanded to include knowledge of past infection and/or development of immunity to COVID-19. In addition, during this period and into 2021, there were two activities that surprised and changed the UK market for testing. First, the voluntary involvement of the public and the uptake of vaccines when they became available, which, for the adult population, currently stands at 90% for the first dose and 82% for both doses. Secondly, the world has been surprised by the speed at which variants of the coronavirus spread. Fortunately, to date, the vaccines appear efficacious, and the diagnostic tests are able to detect these new variants.

vaccinated population does not reduce the demand for COVID-19 tests

Additionally, governments have been very supportive of their populations through the pandemic. However, this has come at an enormous cost and cannot continue indefinitely. Given that the vast majority of the UK population has been vaccinated and the need to get the economy moving again, the UK government has been one of the first to remove restrictions and allow its population to start the process of returning to "normal". This is particularly important for certain industries, notably travel and leisure. However, in order for these to function properly and also limit the risk of spreading infection, even greater use of COVID-19 testing is required. LML is extremely well positioned to benefit from this activity by offering an appropriate testing service.

Travel tests

Current* UK+ government travel requirements for COVID-19 testing

Day 2 & 8 PCR swab test	Day 2 PCR swab test	*Ad hoc* PCR swab test
All persons arriving into the UK from an amber-listed country are required to have a PCR test on Day 2 and Day 8 to prove that the traveller is not infected with COVID-19.	All persons arriving into the UK from a green-listed country are required to have a PCR test on Day 2 prove that the traveller is not infected with COVID-19.	Persons arriving in the UK from certain amber-listed countries who are fully vaccinated can reduce the period of quarantine by following "Test-to-release" rules. This test is also suitable for confirming current infection status and can be used for the provision of travel certificates before leaving the UK.

**Information correct at time of going to press, but subject to change on 4 October2021*
+Rules may vary between England, Scotland, Wales and Northern Ireland
Source: www.gov.uk, Hardman & Co Life Sciences Research

LML's test service is comprehensive and competitive

The UK government website is extremely informative and up-to-date with respect to the regulations for travellers. It also provides a comprehensive list of providers of the various tests required – currently 459 listed providers at a cost range of £4-£675 per test. In recent weeks, there has been some negative media coverage about the cost of such tests, highlighting, on the one hand, that some providers are charging more for the COVID-19 test than the traveller is paying for the return flights. On the other hand, tests being offered for £4-£20 have limited availability and/or price the second test at £400 and an individual cannot book one without the other. Also, while there are many "service providers" listed, samples are being sent to a limited number of laboratories for the actual analysis to be performed, including LML.

The COVID-19 test service provided by LML is comprehensive with transparent pricing. Samples are received either from travellers/customers themselves or through third parties. Results are available within 24 hours.

COVID-19 IgG antibody test

Source: LML website

Immunity tests

Additionally, LML offers an antibody test to evaluate the immunity status in an individual. It uses the most up-to-date test available which provides a quantitative measurement of IgG antibodies against the spike binding domain of SARS-CoV-2. The initial antibody tests were not quantitative.

Recent research has shown that the early immune response in people who have been vaccinated for COVID-19 can predict the level of protection they will have to the virus over time and potentially your body's efficacy to combat viral variants such as the delta variant, currently responsible for the majority of new COVID-19 cases in the UK. There is some thought that all patients entering hospital for whatever reason should have such an antibody test to confirm their COVID-19 status and whether they might have "long-COVID-19".

The LML IgG test will confirm whether an individual has been vaccinated recently or caught COVID-19 naturally, and if their immune system has developed neutralising IgG antibodies. It will provide a quantitative measure of the body's response (between levels of 0 and 80,000 AU/ml). This is important because IgG levels often reduce quite quickly in the months after an infection. The LML test will enable an individual to monitor their IgG levels over time to see if they are dropping below the levels assumed to provide immunity. Results are available within 48 hours.

Longevity of COVID-19 testing

Governments around the world have taken different approaches to COVID-19. For example, Australia and New Zealand have pursued tough lockdown policies, border patrols and quarantine arrangements aimed at completely eradicating COVID-19. These have been reasonably successful, minimising the number of infections and deaths. However, newer alpha and delta variants are more transmissible, making it more difficult to contain. In addition, there is rising unrest in Australia with respect to the strict lockdowns and lack of personal freedoms, with more frequent and violent demonstrations against the stringent policy.

In the UK, the initial lockdown was also strict, but appeared to be reasonably effective. During this period, the scientists made enormous progress in the development of diagnostic tests and vaccines. When they eventually received regulatory approval, the take-up of vaccines by the public was surprisingly positive, taking the view that being vaccinated was a potential route back to a more normal life. This high vaccination rate has allowed the UK government to lift the restrictions and allow mass gatherings for fully vaccinated people at sporting events, leisure activities, weddings and for travel, allowing the economy to recover.

International organisations suggest COVID-19 testing will be needed for foreseeable future

Despite this, there is still an enormous need for COVID-19 testing to continue well into the future, in our opinion. However, it is impossible to say for how long. There have been a number of in-depth articles published recently, notably from the WHO[4], IMF[5] and the Academy of Medical Sciences[6], which all conclude that COVID-19 will continue well into the future, at least for another two years, and that further testing and booster vaccinations are likely to be needed.

The report by the Academy of Medical Sciences highlights the three impending challenges likely to be faced by the UK health and social care system over the next six months:

- a resurgence of respiratory infectious diseases, including COVID-19, influenza and respiratory syncytial virus (RSV);
- pressures resulting from the wider health and wellbeing impacts of the pandemic, including long-COVID and the impact of delayed care seeking; and
- continued disruptions to health and social care delivery.

Four areas driving demand for COVID-19 tests

Taking a slightly different approach to these scientific-led views, our own research has identified the following reasons why we concur with these findings that COVID-19 testing in the UK will continue for at least a further two years:

- **Occupational health:** Regular testing of employees, for example, HCP, factory workers, actors and film crews, to prevent a complete shutdown of a workplace.

[4] World Health Organisation report, summarised by Newsweek: WHO doesn't see pandemic ending until at least the middle of 2022. https://www.newsweek.com/who-doesnt-see-pandemic-ending-until-least-middle-2022-1612643

[5] International Monetary Fund report: https://www.imf.org/en/Publications/Staff-Discussion-Notes/Issues/2021/05/19/A-Proposal-to-End-the-COVID-19-Pandemic-460263

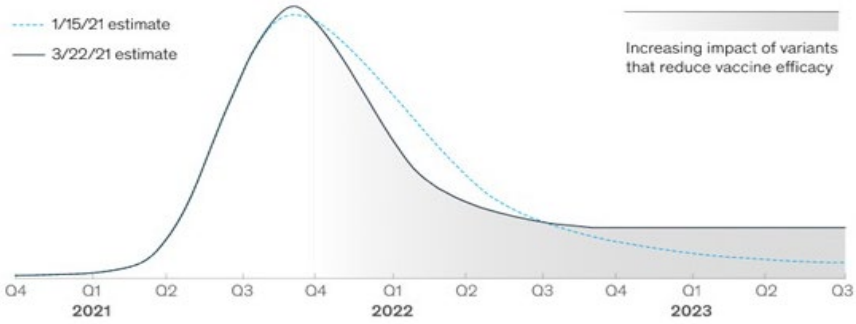
[6] Academy of Medical Sciences report: https://acmedsci.ac.uk/policy/policy-projects/covid-19-looking-ahead-to-winter-2021-22-and-beyond

- **Travel requirements:** Testing of both out-bound and in-bound travellers to comply with the rules of different countries, although this is subject to change at short notice.
- **Procedures:** All patients must be tested ahead of any invasive procedure to prevent any spread of virus to HCP or cause a shutdown of hospital/clinic.
- **Recreational gatherings:** Proof of a recent negative test, together with vaccination status, is expected to be required for large social and sporting gatherings.
- **Leisure industry/activity:** Proof of status likely to be required for the leisure industry, e.g. weddings.

Forecasts for herd immunity to COVID-19

Earlier peak, longer tail: Q3 now likelier for herd immunity, given vaccine availability, but variants of concern could prolong the end.

Probability of herd immunity[1] to COVID-19 for UK and US[2] by quarter (illustrative)



Early herd immunity if the following occur:

- Vaccine rollout and adoption are faster than expected
- Natural immunity is significantly higher than realized
- More-transmissible variants lead to higher rates of natural immunity

Peak probability of herd immunity driven by the following:

- Vaccine rollout to the adult population
- Approximately 3–9 months for manufacturing, distribution, and sufficient adoption to reach herd immunity

Later herd immunity if one or more of the following occur:

- Variants that evade natural immunity from prior infection or render vaccines less effective necessitate vaccine reformulation and revaccination campaigns
- Manufacturing/supply-chain issues slow rollout
- Safety issues delay Biologics License Applications
- More-infectious variants raise the threshold for achieving herd immunity
- Adoption is slower than anticipated
- Duration of immunity is short
- Vaccine prevents disease progression but does not meaningfully reduce transmission

[1]Herd immunity is achieved when a sufficient portion of a population is simultaneously immune to prevent sustained transmission. At this point, significant, ongoing public-health measures are not needed to prevent future spikes in disease and mortality (this might be achieved while there are still a number of people in particular communities who have the disease, as is the case with measles).
[2]Timeline to functional end is likely to vary somewhat based on geography.

Source: McKinsey & Company[7]

[7]When will the COVID-19 pandemic end? by McKinsey & Company, published 23 August 2021: https://www.mckinsey.com/industries/healthcare-systems-and-services/our-insights/when-will-the-covid-19-pandemic-end

Current LML test menu

Category	Code	Description	Sample type				Price
			Blood	Urine	Swab	V/C	
Baseline	QHCG	Beta HCG (Quantitative) - Pregnancy test	✓			V/C	£29
	CA	Calcium	✓			V/C	£29
	LIPP	Cholesterol profile	✓			V/C	£29
	CRP	CRP - high sensitivity	✓			V/C	£29
	FERR	Ferritin	✓			V/C	£29
	FOLA	Folate (Vitamin B9)	✓			V/C	£29
	FSH	Follicular Stimulating Hormone	✓			V/C	£29
	FBC	Full Blood Count	✓			V/C	£29
	GHB	HbA1c - diabetes	✓			V/C	£29
	HBIM	Hepatitis B immunity	✓			V/C	£29
	AUAG	Hepatitis B surface antigen	✓			V/C	£29
	HEPC	Hepatitis C antibodies	✓			V/C	£29
	HDUO	HIV 1&2 /p4 antigen	✓			V/C	£29
	KF	Kidney Function Tests	✓			V/C	£29
	LFT	Liver Function Tests	✓			V/C	£29
	LH	Luteinising Hormone	✓			V/C	£29
	MG	Magnesium (serum)	✓			V/C	£29
	OEST	Oestradiol (E2)	✓			V/C	£29
	PROG	Progesterone - Day 21	✓			V/C	£29
	PROL	Prolactin	✓			V/C	£29
	SERJ	Syphilis IgG/IgM	✓			V/C	£29
	TEST	Testosterone	✓			V/C	£29
	TF	Thyroid function test & monitoring profile (TSH, FT4)	✓			V/C	£29
	B12	Vitamin B12 (active)	✓			V/C	£29
	VITD	Vitamin D (25-OH)	✓			V/C	£29
Enhanced	ML1P	Biochemistry profile	✓			V/C	£49
	ISP	Iron status profile	✓			V/C	£49
	PSA	Prostate specific antigen (total)	✓			V/C	£49
Enhanced STI	SH1	Male/Female Chlamydia/Gonorrhoea screen		✓		V/C	£79
Premier	VP	Vitamin profile - D, B12 & Folate	✓			V/C	£79
	TF2	Thyroid profile including antibodies	✓			V/C	£79
	PR2	Prostate profile (total & free PSA, ratio)	✓			V/C	£79
	HHP	Heart Health Profile	✓			V/C	£79
	FIP	Female hormone profile (including infertility, menopause, HRT & amenorrhoea)	✓			V/C	£79
	MHP	Male hormone profile (including infertility)	✓			V/C	£79
	IMPOP	Erectile Dysfunction/impotence profile	✓			V/C	£79
	HEPB	Hepatitis B profile (HepB sAg, HepB sAb, HepB core IgG/IgM)	✓			V/C	£79
	SH14	STI Screen - Bloods Only	✓			V/C	£79
	ML2P	Premier general health profile	✓			V/C	£79
	AMH	Anti-Müllerian Hormone	✓			V	£79
Premier Plus	TP	Tiredness/Fatigue profile	✓			V	£109
	MLSB	Premierplus Sports Fitness profile	✓			V	£109
	MLSH	Premierplus Full Sports Hormone profile	✓			V	£109
	ML6P	Well Person profile	✓			V	£109
Well Man Premier Plus	ML7P	Well Man profile	✓			V	£149
Well Woman Premier Plus	ML8P	Well Woman profile	✓			V	£149
Premier Plus STI	SH5	Male/Female advanced screen	✓	✓		V/C	£149
COVID-19 tests	COVIGGQ	COVID-19 IgG antibody quantitative levels	✓			V/C	*
	COVPCR	COVID-19 PCR swab test			✓		*
	COVIGM	COVID-19 IgM antibody test	✓			V/C	*
Allergy tests	ALUK	Full UK allergen profile + total IgE	✓			V	£199
Blood group	ABO	Blood typing	✓			V	£79

V=venous; C=capillary
**Please refer to www.privatecoronavirustests.com*
Source: LML

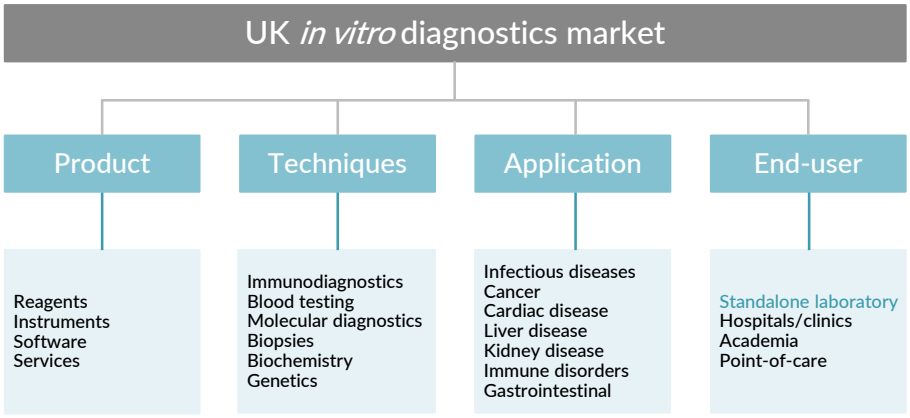
Commercial opportunity

Care needed with UK market statistics...

...some do not include NHS work

Clinical laboratories are an integral part of the overall healthcare industry and the services provided by them represent one segment of the overall *in vitro* diagnostics (IVD) market, which was estimated[8,9] to be worth £2.06bn in 2020. All the diagnostic tests described earlier are performed in these clinical laboratories, which, along with the service provided by LML, sits in the "End-User" category. However, in our opinion, considerable care needs to be taken with this number because, in our view, it fails to include any of the clinical laboratory work performed by the NHS.

In vitro diagnostic market segmentation



Source: Hardman & Co Life Sciences Research

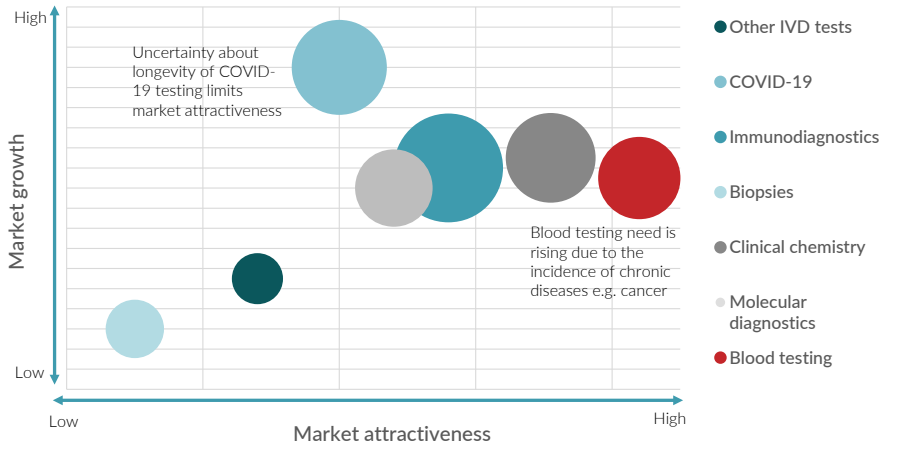
Blood testing is already a high-volume market...

...but still expected to grow...

...with COVID-19 testing being the wild card

On the basis of application, the infectious diseases segment captured the highest share of the market in 2020, largely caused by the impact and testing for COVID-19. Blood testing was also considered to be a significant growth area because, in the absence of being able to visit hospitals during the pandemic, doctors, working remotely, requested more tests for their "at risk" patients so that their health condition could be monitored. In our opinion, these two segments of the IVD market are the most attractive in the near- to-medium term.

In vitro diagnostic market analysis



Source: Hardman & Co Life Sciences Research

[8] Mordor Intelligence
[9] Allied Market Research

Pathology service

The customer base for the clinical laboratory service market is diverse, spanning both public and private sectors. There is a large spectrum of customers ranging from large public and private hospitals and clinics, public and private medical practices, drug companies and contract research organisations conducting clinical trials, insurance companies and providers of occupational health, down to individuals taking an interest in their personal health.

Some competitors are tying up with existing NHS laboratories

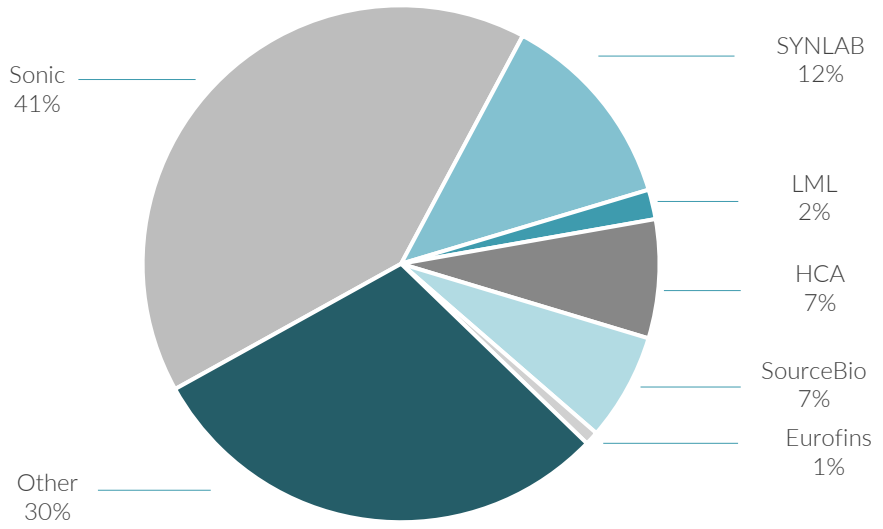
Because of the diversity, trying to get a precise handle on the size of the clinical laboratory service market in the UK is particularly difficult because the vast majority of services are provided by laboratories located within NHS hospitals and there is no information on either the number of tests performed or the staff costs providing these services. In addition, the situation is further complicated by the fact that some NHS Trusts have been establishing commercial partnerships between to offer paid-for services to third parties, including:

- **Southwest Pathology Services:** A joint venture between Somerset NHS Foundation Trust and Yeovil District Hospital NHS Foundation Trust and SYNLAB (UK & Ireland), serving a population of around 500,000 via the two hospitals and more than 100 GP practices.
- **Health Services Laboratories:** A partnership between NWLHT (the combined Royal Free London NHS Foundation Trust and University College London Hospitals NHS Foundation Trust) with Sonic Healthcare (The Doctors Laboratory (TDL)), covering much of central and north-west London.
- **Viapath:** A partnership between Guy's & St Thomas' NHS Foundation Trust and King's College Hospital NHS Foundation Trust with SYNLAB (UK & Ireland) to service 1.7m people living in south-east London.

SYNLAB stated UK market in 2019 was valued at £6.6bn

Despite all these complexities, one of LML's major competitors, SYNLAB AG, reported that the entire UK clinical services market was worth €7.5bn/£6.6bn in 2019[10] and that the accessible market for private laboratories represents ca.8% of this, or €635m/£560m.

UK clinical laboratory testing market – 2020



Source: Hardman & Co Life Sciences Research

[10] SYNLAB AG IPO prospectus

Hardman & Co estimates the private laboratory segment at £700m in 2020

This is reasonably consistent with the top-down approach taken by Hardman & Co, which collates all the publicly available sales data that is available from LML and its key competitors. On this basis, the market opportunity for private clinical laboratories was estimated to be £700m in 2020, with LML having 2% market share.

During 2020, the UK government imposed temporary COVID-19 pandemic restrictions, such as social distancing and lockdowns that adversely affected the ability of individuals to see their GPs or attend hospitals/clinics, which, in turn, adversely affected the normal course of clinical testing volumes. However, when appropriate diagnostics became available, these laboratories were at the forefront of COVID-19 testing, leveraging their experience, equipment and scale to react quickly to the evolving markets for SARS-CoV-2 tests. This remains the case today.

Positive trends driving market growth

There are a number of well-reported trends that we believe will continue to drive growth in the clinical laboratory service industry over the medium and long term. These include:

- **Demographics:** Trends include an aging population, increased frequency of soft diseases (allergies, food tolerance) and long-term disease (diabetes, cancer), which result in increased testing.
- **Outsourcing:** Greater use of sub-contractors and outsourcing by public hospitals, particularly the NHS to achieve productivity gains.
- **Lifestyle:** Personal wellbeing and greater focus on preventive healthcare. This would also include the trend towards DTC activities.
- **Precision medicine:** Clinical laboratories will play a key role in the development of personalised drugs which rely on the regular testing of biomarkers.
- **Pricing:** To compensate for the likely increase in volumes, there is also expected to be pressure on pricing. However, the clinical laboratories should be able to cope with this through scale and operational efficiencies.

Competition

UK private market highly fragmented with a bias to south-east England

Our analysis suggests that the UK clinical laboratory service market is highly fragmented. Recent M&A activity has seen some of the larger volume laboratories taken over by international players and the emergence of multi-national operators. These organisations represent the main competitors to LML and include:

- **Sonic Healthcare:** Australian headquartered company with multinational operations, which is the biggest operator in the UK, with central laboratories in London and Manchester and trading under the brand "The Doctors Laboratory".
- **SYNLAB:** French headquartered company with multinational operations, which acquired Southwest Pathology to gain a foothold in the UK. It operated by developing outsourcing relationships with NHS trusts.
- **HCA:** Clinical services in the UK is a subdivision of HCA's UK operations, mainly servicing its internal private hospitals; part of HCA International.
- **SourceBio:** Recently listed on AIM, SourceBio has specialist testing services which do not compete directly with LML other than for COVID-19 testing.

Thriva and Medichecks do not have their own laboratories, so use third parties

It should be noted that Thriva and Medichecks compete with LML only for customers. These companies do not have any laboratories, using third-party service companies to analyse patients' samples.

Current capacity could generate £0.7m per day…

…but would require more staff

Consequently, we believe that LML is extremely well positioned in a highly fragmented market. The company operates 27/7 and currently has the capacity to process 8,000 of its most comprehensive profiles a day. Taking an average wholesale price of £89, the daily potential opportunity equates to £712,000, or £260m p.a. with the existing facilities and installed equipment, although such volumes would require additional staff.

COVID-19 tests

Too early to identify value of COVID-19 testing market…

COVID-19 testing is a specific part of the overall IVD market. Data from this segment are at an early stage and sketchy. What is clear is that the slowdown in normal activities within clinical testing laboratories caused by the pandemic in 2020 was more than compensated for by the enormous volume of activity in COVID-19 testing when regulatory approved diagnostics became available.

The COVID-19 pandemic accelerated the structural growth of the diagnostic testing industry that has been occurring over the past decade. Diagnostic testing to identify whether a person has active virus or has been exposed previously to the virus was identified early in the pandemic as an effective way of monitoring the spread of the virus and to enable policy makers and healthcare workers to track and mitigate outbreaks of COVID-19.

…but it looks set to continue growing and become more sophisticated

Reasons why both major international organisations and Hardman & Co believe that COVID-19 testing will continue at least for the medium term were highlighted in the previous section (page 21). At the time of writing, the UK government has just announced its intention to make available quantitative IgG antibody blood tests to all people who test positive for COVID-19 in order to assess the efficacy of vaccines and the development and status of immunity, again highlighting the likely ongoing demand for tests well into the future.

LML has capacity, currently, to perform 10,000 tests per day

LML offers a range of different COVID-19 tests depending on the requirement, which have become a major contributor to sales, profits and cashflow for the group. LML currently has capacity to perform up to 5,000 tests per day in Battersea and a further 5,000 in its mobile testing facilities. On an annualised basis, this equates to a £250m opportunity.

Given that the COVID-19 tests are all performed on the Cepheid instrumentation – LML has three 16-module and one 4-module machines – and that all other testing is performed on the Abbott Architect and Sysmex instruments, LML could, practically speaking, undertake 100% of the potential capacity for pathology testing and 100% of the capacity for COVID-19 testing at the same time. However, this would require an increase in staffing levels. Longer term, capacity could be expanded relatively easily in the event that demand increases.

Competition

Over 400 providers on UK.gov website…

…but <30 private laboratories

Looking at the UK government website for the availability of travel tests could lead someone to believe that there are more than 430 companies offering appropriate travel tests and the market is extremely competitive. However, on much closer inspection, it is clear that many of these companies are acting as "retailers" and do not actually perform the analysis themselves, using third parties like LML.

UK COVID-19 testing laboratories				
2030	C-19 Direct (Cambridge Clinical Labs/Nonacus)	Halo Verify	Nonacus	SourceBio Intl.
AlphaBiolabs	Circular1	Lab Med Expert	North London Laboratory	SYNLAB (SouthWest Pathology)
iDNA Genetics (Anglia DNA)	Dante Labs	London Medical Laboratory	Oncologica	The Scientists Laboratory (TSL)
Assured Screening	Eurofins (County Pathology)	Micropathology	PeploBio	Yourgene
Biograd	Everything Genetic	MyHealthChecked	Salient Bio	
Biogroup	Excalibur Diagnostics	Nationwide Pathology	Sonic (The Doctors Laboratory)	

Source: Hardman & Co Life Sciences Research

On closer inspection, we believe that the table above highlights the main competitors to LML for the provision of COVID-19 testing services, all of whom appear to be pricing the tests at around the same levels.

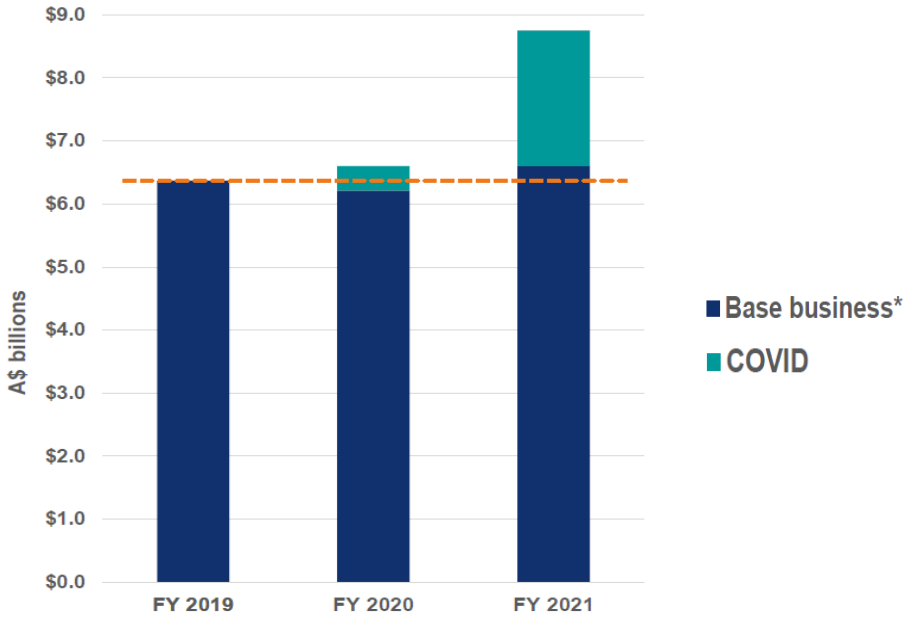
Reflection on the commercial market

All our research on subject fully validated recently by #1 player in UK market…

…albeit Sonic's numbers and comments reflect global view

Sonic Healthcare, a major global player in the clinical diagnostic laboratory market, recently reported financial results for its fiscal year ending June 2021. Its presentation contains an excellent graphic, which we believe to be a really good representation of what has happened in the market for clinical testing services over the past three years.

Sonic Healthcare sales performance – effect of COVID-19



Base business = total sales minus COVID-19 revenue
Source: Sonic Healthcare

The graphic shows, pre-pandemic (2019), Sonic's base business had sales growth of ca.4%, in line with our estimate of global market growth. However, growth in its core business stalled in 2020 due to the impact of the pandemic, but has then been followed by limited recovery (ca.6%) in 2021.

Overlaying this, is the benefit that Sonic has seen through its rapid entry into COVID-19 testing. Consistent with our own thoughts, the company concludes that it expects:

- ongoing growth of its base business, despite the pandemic – underlying growth drivers unchanged; and
- significant ongoing COVID-19 testing sales into the foreseeable future.

Funding history

Since inception, LML raised only £0.42m

LML was incorporated on 4 November 2016 with the issue of 100,000 Ordinary shares of 0.1p. The first funding round was in January 2018 at 850p per share, raising £150k for working capital purposes, giving the company a post-money valuation of £1.0m. There have been two further rounds in 2019 and 2020, as shown in the following table, raising a total of £260k, the latest round in January 2020 valuing the company at £1.8m, at a time when the company had negligible sales.

LML funding history

Date	Shares	Price	Raised	Enlarged capital	Post-money valuation
4 Nov 2016	100,000	-	-	100,000	-
24 Jan 2018	17,650	£8.50	£150k	117,650	£1.00m
16 Sep 2019	15,885	£8.50	£135k	133,535	£1.14m
2019	2,941	£8.50	£25k	136,476	£1.16m
24 Jan 2020	8,871	£12.21	£108k	145,347	£1.77m
Total			**£418k**	**145,347**	
IPO 2021*	+26,427	+£189.20	£5,000k	171,774	£32.5m
			£5.42m		**£32.5m**

**To be confirmed*

+Using the mid-point of a £25m-£30m pre-money valuation range

Source: Companies House, Hardman & Co Life Sciences Research

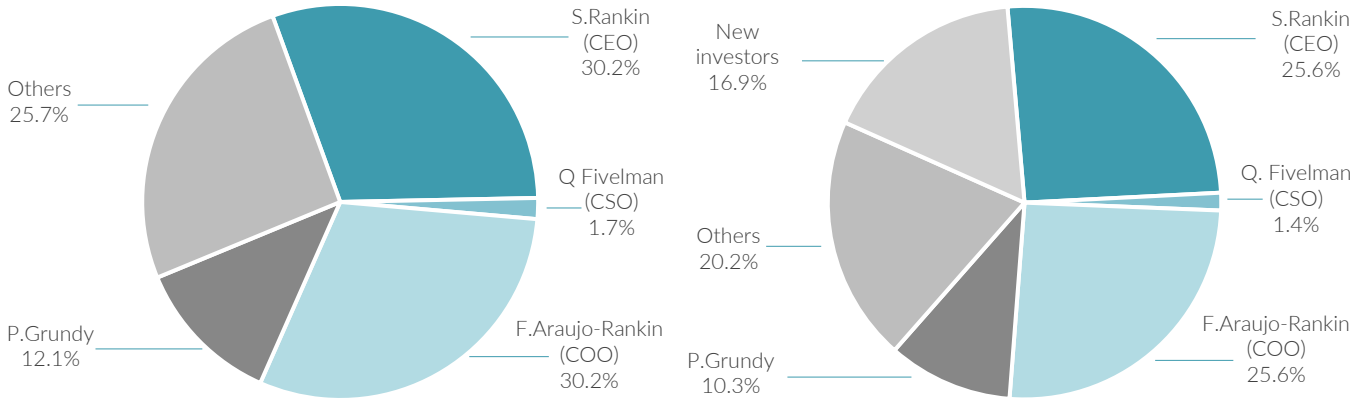
Short-term directors loans fully repaid

During 2019 and early 2020, the company was also supported by some directors loans, totalling £444k, which provided further working capital. However, when the company became profitable and cash-generative, these loans were fully repaid by the end of 2020.

Therefore, only a relatively small amount of capital has been invested into LML to get the company where it is today.

Everything was changed by COVID-19. On the one hand, it slowed, initially, the ability of the company to develop its pathology testing service; but, on the other hand, it transformed LML into a fully operational, profitable and cash-generative company. In addition, its future target population in the future for pathology tests got used to going to a pharmacy for clinical testing services and help to build LML's network pf pharmacy partners.

Share capital – current and after IPO



Source: Companies House, Hardman & Co Life Sciences Research

Founders will still have majority share

Even though the company is cash-generative, management believes that it will be able to build on its core strategy to develop its DTC testing service through both its website and through the independent pharmacy network at a faster rate with more capital. Consequently, it is intending to IPO on AIM in 2021 to raise up to £5m of additional investment capital. For the purposes of this document, and to provide potential investors with information, we have assumed that the maximum £5m is raised and that the pre-money valuation of LML will be the mid-point of a £25m-£30m range.

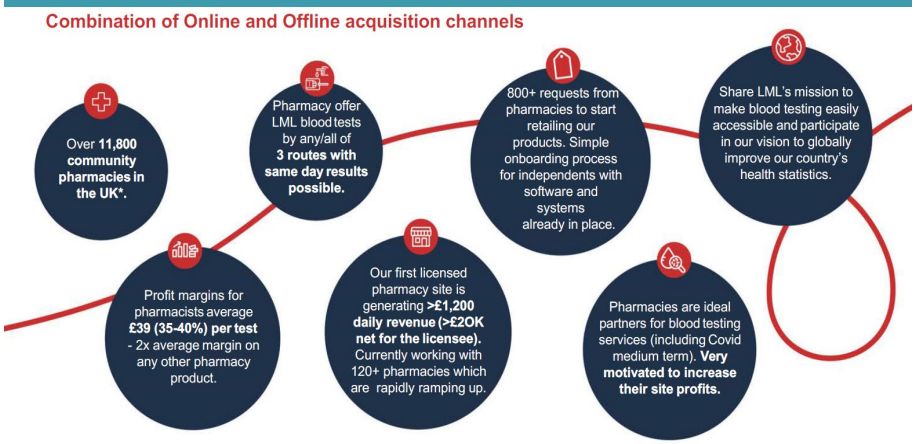
Use of funds

The key near-term focus of the company is to continue its recent strong growth trajectory in sales and profit. In order to achieve this when the benefits of COVID-19 testing start to diminish, LML needs to accelerate the development of its network of independent pharmacies and B2B partners to optimise the future demand for blood tests. Consequently, most of the cash raised in its proposed IPO will be earmarked for an expansion in sales and marketing activities to:

- scale up both online and offline marketing campaigns and direct sales opportunities;
- further develop LML digital products; and
- expand its phlebotomy and health-check network.

Taken together, these activities will greatly raise the profile of LML in the marketplace, strengthen the company's brand credibility, and improve its ability to attract talent to the organisation.

Customer acquisition – pharmacies



Source: LML

Additionally, the management team recognises there are certain overseas markets that are receptive to the same model being adopted in the UK, so, depending on the quantum raised at IPO, some cash may be used for international expansion through specific pilot programmes.

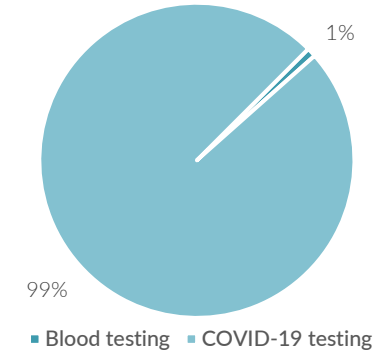
Inorganic growth opportunities

The commercial section highlighted how the UK market was highly fragmented. In our opinion, some of the smaller clinical service laboratories might suffer from lack of scale and provide LML with the opportunity to expand its testing services, laboratory network and geographical reach. Having a listing increases the access to capital and may make the acquisition of targets easier to close.

Financial forecasts

Income statement

2021E sales split



Source: Hardman & Co Life Sciences Research

- **Sales:** Tests for COVID-19 are forecast to generate 99% of group sales in fiscal 2021. The proportion of sales from blood tests is expected to rise in the future as LML signs up more partners and increases website marketing activity.
- **Gross margin:** As volumes of tests being analysed rise, so the efficiencies of scales are expected to be reflected in the gross margin, which currently stands at ca.50%.
- **SG&A:** Substantial investment is being made into marketing and advertising in order to add shops, increase the number of partnerships, and continual updating of the website. In addition, LML has recently paid some bonuses to certain members of staff. This is reflected in the big rise in SG&A forecast for 2021.
- **Exceptional items:** Our statutory forecasts include IPO costs of £1.0m, which have been included as an exceptional item.
- **EPS:** LML is likely to have a share split immediately ahead of the IPO, which will affect the EPS calculation and make numbers more manageable.

Income statement

Year-end Dec (£m)	2018	2019	2020	2021E	2022E	2023E
Sales	0.31	0.04	12.61	26.52	28.37	34.24
COGS	-0.39	-0.19	-6.34	-12.46	-12.48	-13.35
Gross profit	-0.08	-0.15	6.27	14.06	15.89	20.89
Gross margin	-25.4%	-431.4%	49.7%	53.0%	56.0%	61.0%
SG&A	-0.22	-0.21	-2.63	-10.05	-8.46	-9.87
% sales	71.6%	605.7%	20.9%	30.8%	29.8%	28.8%
Share-based costs	0.00	0.00	0.00	0.00	0.00	0.00
EBITDA	**-0.30**	**-0.30**	**3.74**	**4.30**	**7.81**	**11.36**
Depreciation	0.00	-0.06	-0.08	-0.27	-0.36	-0.33
Amortisation	0.00	0.00	-0.02	-0.02	-0.02	-0.02
Other income	0.00	0.00	0.00	0.00	0.00	0.00
Underlying EBIT	**-0.30**	**-0.36**	**3.64**	**4.00**	**7.42**	**11.02**
EBIT margin	-	-	28.9%	15.1%	26.2%	32.2%
Exceptional items	0.00	0.00	0.00	-1.00	0.00	0.00
Statutory EBIT	-0.30	-0.36	3.64	3.00	7.42	11.02
Net interest	-0.01	-0.09	-0.07	0.02	0.06	0.09
Underlying PBT	**-0.31**	**-0.45**	**3.57**	**4.03**	**7.48**	**11.10**
Other financial items	0.00	0.00	0.00	0.00	0.00	0.00
Extraordinary items	0.00	0.00	0.00	0.00	0.00	0.00
Statutory PBT	-0.31	-0.45	3.57	3.03	7.48	11.10
Reported tax	0.01	0.01	-0.53	-0.66	-1.42	-2.11
Underlying net income	**-0.30**	**-0.44**	**3.04**	**3.36**	**6.06**	**8.99**
Statutory net income	-0.30	-0.44	3.04	2.36	6.06	8.99
Ordinary 0.1p shares:						
Period-end (m)	0.118	0.136	0.145	0.172	0.172	0.172
Weighted average (m)	0.118	0.127	0.141	0.152	0.172	0.172
Fully diluted (m)	0.118	0.127	0.141	0.162	0.192	0.202
Underlying basic EPS (p)	**-257**	**-347**	**2,160**	**2,212**	**3,527**	**5,236**
Statutory basic EPS (p)	-257	-347	2,160	1,554	3,527	5,236
Underlying fully dil. EPS (p)	-257	-347	2,160	2,076	3,159	4,458
Statutory fully dil. EPS (p)	-257	-347	2,160	1,458	3,159	4,458
DPS (p)	0	0	0	86	0	0

Source: Hardman & Co Life Sciences Research

Balance sheet

The balance sheet of LML is extremely clean.

- **Fixed assets:** In its relatively short history, investment has been into scientific instrumentation, essential for the business, which is depreciated over a period of 3-5 years. Capitalised leases are depreciated over the life of the lease.
- **Gross cash:** At 30 June 2021, the gross cash position was £3.4m. This will be boosted by operational activity in 2H'21 together with the net proceeds from its IPIO. Gross cash at 31 December 2021 is forecast to be ca.£8.3m.
- **Debt:** LML has no loans or overdrafts. The only financial liabilities reflect the long-term leases on the laboratory and office facility.
- **Capital increase:** Our forecasts are based on the assumption that LML will raise gross new capital of £5m at IPO to accelerate the rate of growth of the group.

Balance sheet						
@31 Dec (£m)	**2018**	**2019**	**2020**	**2021E**	**2022E**	**2023E**
Shareholders' funds	-0.21	-0.59	2.57	9.93	15.98	24.98
Cumulated goodwill	0.00	0.00	0.00	0.00	0.00	0.00
Total equity	-0.21	-0.59	2.57	9.93	15.98	24.98
Share capital	0.00	0.00	0.00	0.17	0.17	0.17
Reserves	-0.21	-0.59	2.57	9.75	15.81	24.81
Capitalised R&D	0.00	0.00	0.00	0.00	0.00	0.00
Minorities	0.00	0.00	0.00	0.00	0.00	0.00
Provisions/liabilities	0.00	0.00	0.00	0.00	0.00	0.00
Deferred tax	0.00	0.00	0.00	0.00	0.00	0.00
Long-term leases	0.34	0.31	0.26	0.26	0.26	0.26
Short-term leases	0.00	0.05	0.06	0.06	0.06	0.06
Long-term loans	0.00	0.00	0.00	0.00	0.00	0.00
Short-term debt	0.02	0.00	0.05	0.05	0.05	0.05
less: Cash	0.00	0.01	4.18	8.65	13.63	21.92
less: Deposits	0.00	0.00	0.00	0.00	0.00	0.00
less: Non-core invests.	0.00	0.00	0.00	0.00	0.00	0.00
Invested capital	**0.15**	**-0.23**	**-1.26**	**1.63**	**2.71**	**3.42**
Fixed assets	0.21	0.35	0.42	1.15	0.89	0.66
Intangible assets	0.00	0.00	0.11	0.09	0.06	0.04
Capitalised R&D	0.00	0.00	0.00	0.00	0.00	0.00
Goodwill	0.00	0.00	0.00	0.00	0.00	0.00
Inventories	0.04	0.05	0.22	0.31	0.48	0.63
Trade debtors	*0.62*	*0.01*	*1.59*	*3.27*	*5.13*	*6.64*
Other debtors	*-0.58*	*0.01*	*0.26*	*0.26*	*0.26*	*0.26*
Tax liability/credit	*0.00*	*0.00*	*-0.50*	*-0.66*	*-1.42*	*-2.11*
Trade creditors	*-0.69*	*-0.70*	*-2.18*	*-1.79*	*-1.79*	*-1.91*
Other creditors	*0.55*	*0.05*	*-1.17*	*-0.99*	*-0.90*	*-0.78*
Debtors less creditors	-0.10	-0.63	-2.00	0.09	1.28	2.09
Invested capital	**0.15**	**-0.23**	**-1.26**	**1.63**	**2.71**	**3.42**
Net cash/(debt)	**-0.36**	**-0.36**	**3.82**	**8.29**	**13.27**	**21.56**

Source: Hardman & Co Life Sciences Research

Cashflow

The cashflow model for LML is very straight-forward. Underlying EBIT closely reflects the profit being made on sales and the corporate overhead (SG&A). With only modest depreciation, the EBITDA is very close to the EBIT.

- **Cash-generative:** Despite the introduction of COVID-19 tests during the middle of 2020, LML still generated free cashflow of £4.2m during the year. Even though LML is making significant investment in marketing and advertising to maximise the future blood testing opportunity, the company is still forecast to generate £1.6m operational cashflow in 2021, which is expected to accelerate going forward.
- **Future needs:** The additional funds from the IPO will be used to invest in accelerating the blood-testing growth opportunity, by signing up more business partners, pharmacies and patients via the website.
- **Inorganic growth:** The clinical laboratory market in the UK is extremely fragmented. LML could take the opportunity to expand its geographical reach nationally, accelerating the growth opportunity even faster, through consolidation.
- **Dividend:** LML recently paid a dividend (86p per share) to shareholders.

Cashflow						
Year-end Dec (£m)	2018	2019	2020	2021E	2022E	2023E
Underlying EBIT	-0.30	-0.36	3.64	4.00	7.42	11.02
Depreciation	0.00	0.06	0.08	0.27	0.36	0.33
Amortisation	0.00	0.00	0.02	0.02	0.02	0.02
Share-based costs	0.00	0.00	0.00	0.00	0.00	0.00
Inventories	*0.00*	*-0.01*	*-0.17*	*-0.09*	*-0.18*	*-0.14*
Receivables	*0.53*	*0.00*	*-1.82*	*-1.68*	*-1.86*	*-1.51*
Payables	*-0.93*	*0.25*	*2.63*	*-0.39*	*0.00*	*0.13*
Change in working capital	-0.39	0.24	0.64	-2.17	-2.03	-1.53
Exceptionals/provisions	1.55	0.00	0.00	0.00	0.00	0.00
Disposals	0.00	0.00	0.00	0.00	0.00	0.00
Other	0.00	0.00	0.00	0.00	0.00	0.00
Company op. cashflow	**0.86**	**-0.06**	**4.38**	**2.13**	**5.77**	**9.84**
Net interest	0.00	0.00	0.00	0.00	0.01	0.01
Lease payments	0.00	-0.10	-0.04	-0.04	-0.04	-0.04
Tax paid/received	0.00	0.01	0.00	-0.50	-0.66	-1.42
Operational cashflow	**0.86**	**-0.15**	**4.34**	**1.60**	**5.08**	**8.39**
Capital expenditure	0.00	-0.01	-0.14	-1.00	-0.10	-0.10
Capitalised R&D	0.00	0.00	0.00	0.00	0.00	0.00
Sale of fixed assets	0.00	0.00	0.00	0.00	0.00	0.00
Free cashflow	**0.86**	**-0.16**	**4.20**	**0.60**	**4.98**	**8.29**
Dividends	0.00	0.00	0.00	-0.13	0.00	0.00
Acquisitions	0.00	0.00	-0.13	0.00	0.00	0.00
Disposals	0.00	0.00	0.00	0.00	0.00	0.00
Other investments	0.00	0.00	0.00	0.00	0.00	0.00
Cashflow after investments	**0.86**	**-0.16**	**4.07**	**0.47**	**4.98**	**8.29**
Share repurchases	0.00	0.00	0.00	0.00	0.00	0.00
Equity issues	0.00	0.16	0.11	5.00	0.00	0.00
Cost of fundraise	0.00	0.00	0.00	-1.00	0.00	0.00
Currency effect	0.07	0.00	0.00	0.00	0.00	0.00
Borrowings acquired	0.00	0.00	0.00	0.00	0.00	0.00
Change in net cash/(debt)	**0.93**	**0.00**	**4.18**	**4.47**	**4.98**	**8.29**
Opening net cash/(debt)	0.00	-0.36	-0.36	3.82	8.29	13.27
Closing net cash/(debt)	**-0.36**	**-0.36**	**3.82**	**8.29**	**13.27**	**21.56**

Source: Hardman & Co Life Sciences Research

Valuation

Valuing private companies with a relatively short trading history can be quite difficult. Usually, we adopt a multi-disciplinary approach to provide readers with as much information as possible in order for potential investors to make an informed judgment about whether the company is a good investment opportunity. We have adopted a similar approach with LML. However, because the forecast period is associated with uncertainty about the longevity of COVID-19 testing and much of the value would be in the terminal period, we have not undertaken a DCF analysis, preferring instead to focus on multiple-based valuations and comparator analysis.

Sales progression

Sales five-year CAGR forecast at 34.1%...

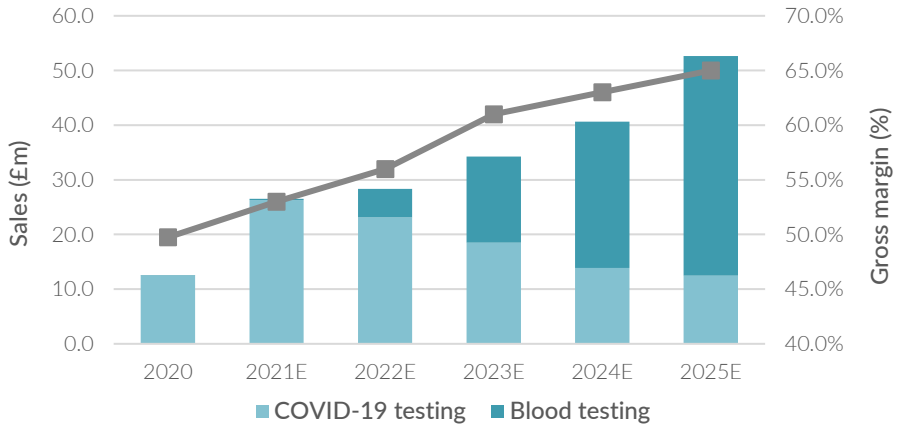
...and gross margin expansion

Our forecast growth in sales at LML over the next five years is shown in the following graphic. 2020 benefited from the introduction of COVID-19 tests. This is forecast to continue for at least for a further 18 months after which we have taken a prudent view that it will start to tail off. This is providing LML with time to build up its blood-testing business through its network of independent pharmacies and DTC via its website.

The gross margin is forecast to improve over the forecast period as a result of:

- undertaking more test analysis in-house;
- improved efficiencies through greater volumes; and
- better margins on blood tests compared with COVID-19 tests.

Sales and gross margin



Source: Hardman & Co Life Sciences Research

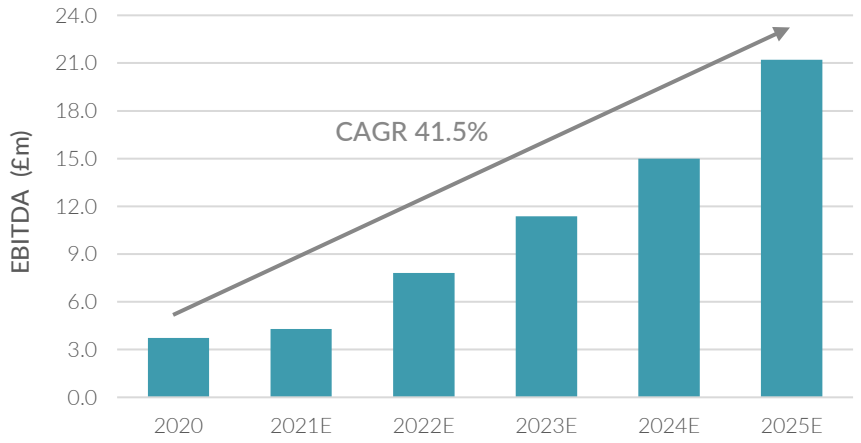
EBITDA progression

LML has evolved over the past 18 months into a profitable and highly cash-generative company. This situation is expected to continue in the future driven by the change in emphasis of sales between COVID-19 tests and higher margin blood tests, as highlighted above.

EBITDA five-year CAGR forecast at 41.5%.

Based on our forecasts for the next five years, we believe that LML has the prospect of growing its EBITDA at a compound rate of 41.5%, as shown in the following graphic. In the event that the switch in the proportion of sales from COVID-19 to blood tests occurs at a faster rate than forecast, the rate of EBITDA growth would trend even higher. In addition, LML is likely to make investments from its cashflow to expand its testing capacity and capability over the forecast period, again boosting EBITDA potential. For these reasons, we believe that LML is an attractive proposition.

EBITDA



Source: Hardman & Co Life Sciences Research

Ratio-based valuation

Based on the assumptions and forecasts highlighted earlier, and a post-money valuation of £32.5m (mid-point of our £30m-£35m range), the progression in sales and EBITDA sees a steady reduction in the EV ratios over the forecast period.

LML EV ratios

EV ratio	2000	2021E	2022E	2023E	2024E	2025E
EV/sales (x)	2.02	0.96	0.90	0.74	0.61	0.47
EV/EBITDA (x)	6.82	5.94	3.27	2.24	1.70	1.20

Source: Hardman & Co Life Sciences Research

Comparative valuation

Global market dominated by major multinationals

Clinical laboratory services make up a global business and there are a large number of major multinational players, including:

- **Alere:** A private health management company that has grown into a leader in diagnostics solutions. It operates on a global scale with a diverse portfolio of solutions for diagnosing and monitoring health conditions.
- **Eurofins Scientific:** Headquartered in France, Eurofins operates laboratories on an international basis with a range of testing services well beyond clinical diagnostics, including testing services to the pharmaceutical, food, environmental and consumer products industries, and to governments.
- **Exact Sciences:** A US-listed molecular diagnostics company specialising in the detection of early-stage cancers following its acquisition of Genomics Health in 2019.
- **Laboratory Corporation of America:** Best known as LabCorp, it is one of the largest clinical laboratory groups, offering more than 5,000 clinical, anatomic pathology, genetic, and genomic tests to customers around the world.
- **Myriad Genetics:** A leading provider of specialty laboratory services with a focus on six medical specialties: oncology, urology, dermatology, preventive care, autoimmune, and neuroscience.
- **NeoGenomics:** A US-based cancer diagnostics company that serves hospital and private pathology laboratories, pharmaceutical development organisations, and office-based oncologists.
- **OPKO Health:** A regionally focused clinical laboratory that processes ca.10 million tests annually through its subsidiary Bio-Reference Laboratories.

- **Quest Diagnostics:** A top provider of clinical diagnostic services offering a wide range of tests through a national network of patient service centres.
- **Siemens Healthineers:** A global healthcare company that provides laboratory diagnostic products and services in a variety of areas, including clinical chemistry, drug testing, haematology, immunology, molecular diagnostics.
- **Sonic Healthcare:** Headquartered in Australia, but with clinical laboratories operational in the US, Europe and Australia. It is the market leader in the UK through its subsidiary, The Doctors Laboratory, and a major competitor to LML.
- **SYNLAB:** French company listed in Germany that offers a wide range of analysis and diagnostic testing services in more than 30 countries worldwide.

UK is a unique market dominated by the NHS

Having said that, most of these companies are focused on countries, particularly the US, where there is large-scale testing required and performed in a private healthcare environment. However, the UK is a unique situation, because the vast majority of clinical tests are requested by NHS HCPs and performed in laboratories located in NHS hospitals. Consequently, only a small proportion of the market is available to private testing laboratories. As stated earlier, this has resulted in a very fragmented market, with numerous small operators.

MyHealthChecked is closest direct competitor

Therefore, for our peer group analysis, we have selected a small group of six companies that either compete directly with LML in the UK, or are UK businesses that offer COVID-19 tests alongside another core business. In our opinion, the business and strategy of MyHealthChecked (MHC.L) is the closest to LML, except that the non-COVID-19 test business is focused on female health and wellness compared to blood testing for LML. Based on latest reports, LML appears to have captured more of the COVID-19 opportunity compared with MHC.

The sales and EBITDA forecasts shown in the following table for these companies are based on the next prospective reporting year as many do not share a December fiscal year-end. We have based the relative EV calculations on an assumed post-money mid-point valuation of LML of £32.5m.

Peer group valuation

Company	Abingdon Health	London Medical	MyHealth Checked	Sonic Healthcare	SourceBio Intl.	SYNLAB	Yourgene
Ticker	ABDX.L	-	MHC.L	SHL.AX	SBI.L	SYAB.DE	YGEN.L
Reporting currency	£/p	£	£/p	A$	£/p	€	£/p
Share price	42.5	189.2	2.5	39.5	135.0	20.5	14.8
Shares in issue	95.7	0.2	725.2	477.9	74.2	222.2	723.8
Market cap (lc m)	40.7	32.5	18.1	18,878	100.1	4,556	106.8
Mkt cap (£m)	40.7	32.5	18.1	10,106	100.1	3,944	106.8
Cash	14.0	8.7	4.5	1,008	25.0	0	7.0
Debt	-1.4	-0.4	-0.1	-3,235	0.0	-1,632	-0.7
EV (lc m)	28.0	24.2	13.7	21,105	75.1	6,188	100.5
EV (£m)	28.0	24.2	13.7	11,298	75.1	5,357	100.5
2021E* sales	16.0	26.5	15.0	10,500	90.0	3,500	26.0
EV/sales (x)	1.75	0.91	0.92	2.01	0.83	1.77	3.86
Relative to LML (x)	**1.92**	-	**1.00**	**2.20**	**0.91**	**1.94**	**4.23**
2021E* EBITDA	4.95	6.27	1.50	3,000	24.00	950	3.50
EV/EBITDA (x)	5.66	3.86	9.16	7.03	3.13	6.51	28.70
Relative to LML (x)	**1.47**	-	**2.37**	**1.82**	**0.81**	**1.69**	**7.43**

lc = local currency
**Next reporting period – not all companies have a December period-end*
⁺Normalised for recent one-off bonus payments
Share prices and forex taken at close of business on 30 September 2021
Source: Hardman & Co Life Sciences Research

- **EV/sales:** Based on the next forecast period, these peers are currently trading on EV/sales multiples of 0.82x to 3.86x, with the weighted average being 1.92x. Based on our mid-point valuation for LML, the relative range to LML is 0.91x to 4.23x, with a weighted-average of 2.10x, suggesting that there is solid upside potential in the event that LML delivers on our sales forecasts.
- **EV/EBITDA:** Our comparator companies are currently trading on 2021E EV/EBITDA multiples in the range 3.13x to 28.70x, with the top end of the range defined by YGEN, which is forecast to become EBITDA-positive for the first time in 2022. The weighted-average EV/EBITDA of this peer group is 6.85x, which is 1.78x greater than the normalised (excludes one-off bonus payments) EV/EBITDA for LML, again suggesting scope for upside.

Valuation mid-point suggests significant discount compared with peers

The advantage of using the weighted average is that it eliminates the fact that LML's UK peers are small companies, with some of them only just coming into profitability.

Upside potential

Throughout this report, we have recognised how transformative the COVID-19 opportunity has been for the company and that there remains some uncertainty about how long testing will be necessary. Additionally, we are cognisant that government requirements for testing can change almost overnight – e.g. recent changes to travel testing recommendations from mid-October. Consequently, forecasts have been prepared on a conservative basis. Despite this cautious approach, the proposed valuation of LML still looks attractive compared with its listed peers.

Potential new contracts would add significantly to profit forecasts…

…highlighting attractiveness of proposed valuation

Additionally, LML has been approached recently by two potential corporate partners about performing tests on a contractual basis – one is predominantly for pathology tests, the other is for COVID-19 testing. A contract with either of these B2B clients would significantly increase sales and profit forecasts over the coming 12 months, highlighting the fact that our forecasts have been prepared on a conservative basis, and suggesting that forecasts are more likely to move in an upward direction, rather than a downward direction. We would expect any such changes to profit forecasts to further emphasise the attractive proposed valuation of LML and for them to be reflected by a positive response of the shares when listed.

Company matters

Registration

Incorporated in the UK with company registration number: 10463817

Registered office:

Zone 1
2 Pensbury Street
London
SW8 4TJ

+44 20

www.londonmedicallaboratory.co.uk

Proposed board of directors

LML intends to seek admission to trading on AIM during 4Q'21. At the time of listing, the company is proposing to change the board with the appointment of an executive director and some non-executive directors, as shown in the following table.

Proposed board of directors from admission				
Position	**Name**	**Nominations**	**Remuneration**	**Audit**
Chairman	Simon Mackinnon			
Chief Executive Officer	Dr Seth Rankin*			
Chief Operating Officer	Flavia Araujo-Rankin*			
Chief Financial Officer	Quentin Ingham			
Non-executive director	Stuart Quin			
Non-executive director	David Bateman			
Non-executive director	Tim Donell			

**Current board member*
Source: Company reports

Dr Seth Rankin – Chief Executive Officer

Co-founder of LML, Seth has extensive experience in the NHS and in private healthcare. He spent four years working in a senior management role in international medical assistance, then more than 10 years as the managing partner of a large NHS general practice which grew from 2,500 to 17,500 patients under his guidance. During this time, he also spent nine years in NHS commissioning at board level, leading on a number of innovative service redesigns. He has founded three rapid-growth healthcare start-ups and successfully exited one. This broad experience has given him unique insights into the needs of patients and their healthcare providers and has been key to LML's success in developing its products and delivery systems to exactly match these expectations. His extensive commercial and management experience has enabled him to lead LML successfully throughout a period of extraordinary growth and profitability. Seth joined LML on a full-time basis in 2019 and became CEO in 2020. Seth obtained his medical degree from the University of Auckland, New Zealand and obtained his MRCGP from the London Deanery.

Flavia Araujo-Rankin – Chief Operating Officer

Founder of LML, Flavia has been a lifelong entrepreneur with proven skills in managing people and resources effectively. She has founded and managed a range of businesses in the UK and Brazil, including retail, import/export, property development and education. Her love of healthcare started as a young girl collecting food and arranging medical check-ups for an orphanage in Recife. This interest grew

when, later, she worked for six months as a hospital volunteer in the remote Amazonian jungle. Working for two years in a cancer hospital gave her the desire and skills to support people in difficult health situations. It was her entrepreneurial vision, leadership and operational expertise that created and built LML from scratch, and she has been critical to LML's successful growth throughout. She has undertaken several years of tertiary education in medical sciences and executive training in business.

Quentin Ingham – Chief Financial Officer (proposed board appointment)

Quentin oversees the financial health and performance of the business and ensures that there are suitable financial controls and procedures in place. He is a qualified chartered accountant (ACA) having qualified in a top 10 firm before moving into corporate finance with Deloitte, where he spent four years in Transaction Services. He went on to spend a further eight years in Transaction Services at Baker Tilly (now RSM) before moving into industry and his recent background has been working as FD/CFO for a number of retail businesses (both private equity backed and listed groups). Quentin joined LML as CFO in December 2020 and will be appointed to the board of directors in the event that its shares are listed on AIM.

Simon Mackinnon OBE – Non-Executive Chairman

Simon provides a broad corporate oversight to the company, together with corporate governance experience. Currently, he is Chairman of Xeros China, part of AIM-listed Xeros Technology Group. Previously, Simon was Chairman of Sinophi Healthcare (hospitals and elderly care management), Huai'An Hospital Investment Management and non-executive director of Huma Therapeutics (remote patient monitoring). Prior to this, he was President of Corning Greater China (laboratory and life science products, fibre optics, LCD glass). From these appointments, Simon has extensive healthcare industry experience, including the developing and making of laboratory and life science products, digital healthcare and also hospital investment and management.

Stuart Quin – Non-Executive Director (proposed)

Stuart joined LML as an NED in 2021. He is currently the CEO of Medica Group plc (MGP.L), joining from SYNLAB, the international laboratory diagnostic services provider, in September 2019. Stuart brings both diagnostic and international experience to LML and extensive experience of working in partnership with the NHS. Previously, Stuart worked in private equity at August Equity and 3i and spent four years in the health and life sciences strategy consulting practice at Accenture. Stuart holds a BSc (Hons) in Immunology from the University of Edinburgh, a PhD in Immunology from Imperial College London and an MBA from INSEAD. He is a Fellow of the Royal Society of Medicine and the Royal Geographical Society.

David Bateman – Non-Executive Director (proposed)

David has more than 25 years' experience in the financial services and technology sectors. With an investment banking background in equities at Deutsche Bank and Merrill Lynch, he became a partner at an early-stage hedge fund, spun out from Deutsche Bank, successfully growing the business to assets of €6bn. He has founded several businesses, with successful exits, and is also an active angel investor in early-stage growth companies. Currently, David is consultant to the asset management sector and is an NED at a number of private and public companies, often as an investor-appointed director during times of high growth and corporate change. In the public market context, he has held roles on audit, remuneration and nomination committees. Holding a BA and MA from Cambridge University, David is due to begin a fellowship at Cambridge University in 2022, with a focus on corporate governance. He is a published business author and has been a guest speaker at some of the world's leading business schools, including Harvard, Columbia, MIT, Wharton and Oxford. He is a British national and resides in Oxford.

Tim Donell – Non-Executive Director (proposed)

A certified chartered accountant, Tim has over 15 years' experience in finance, accounting and management roles within growth companies across travel, e-commerce and web technology and has a demonstrated track record of developing and improving financial processes to drive business performance. Qualifying in practice with a background in auditing a variety of SMEs from fireworks manufacturers to organic baby food producers allowed a solid base for a pathway into industry. Experience of US subsidiaries was gained in the biotech sector before moving to tourism within a UK subsidiary of a global tour operator. Moving to group CFO over the subsequent eight years, Tim oversaw a turnaround of the business from a negative EBITDA to YoY organic growth culminating in pre-pandemic revenues of $30m. Tim is currently working as CFO for three separate listed entities ensuring financial procedures are in place to meet regulatory requirements and supporting the investments to maximise returns.

Advisors

Advisors to the company	
Function	**Appointment**
NOMAD	SPARK Advisory Partners Ltd
Broker	Peterhouse Capital Ltd
Auditors	PKF Littlejohn LLP
Legal advisors	Locke Lord LLP
Financial PR	Yellow Jersey PR Ltd
Registrar	Neville Registrars Ltd

Source: Company reports

Corporate governance

The board recognises the importance of sound corporate governance and has confirmed that, in the event that LML lists on AIM, it intends to comply with the QCA code[11]. The QCA code has become a widely recognised benchmark for corporate governance of smaller quoted companies, particularly AIM companies.

The QCA code recommends that at least two members of the board are non-executive directors determined by the directors to be independent. In the event that the company is admitted onto AIM, the board will comprise three executive directors and four NEDs, of whom, three are considered to be independent, thereby LML will be compliant with the requirements of the QCA Code.

In the event of AIM admission, the company proposes to establish an Audit and Risk Committee, Remuneration Committee, Nomination Committee and Compliance and Ethics Committee. In addition, when required, separate committees may be set up by the board to consider specific issues when the need arises.

[11] QCA code

Risks

It goes without saying that investments in small, early-stage companies carry a significant risk, and investors must be aware of this fact.

In our opinion, the following risks are particularly relevant.

Key personnel

LML's business plan was developed by its founders and senior management, who have specialised knowledge and skills regarding the company, the clinical laboratory testing service market and the development of online business generally. Following its listing, the two founders (CEO and COO), combined, will retain a majority shareholding in the company.

Operational risks

As part of this report, we identified three potential risks directly related to the testing service provided by LML (see details on page 17), which are:

- having appropriate protocols in place to break bad news to a patient in circumstances where the test generates an abnormal result;
- having appropriate procedures in place to prevent any breach of confidentiality; and
- greater availability of POC tests online, which can be performed in the comfort and privacy of an individual's home environment obviates the need for machine-based testing.

COVID-19 testing

Tests for COVID-19 are an important contributor to sales, profits and cashflow for the group. Much of the demand is generated by government policy, which is prone to significant change at short notice. However, even allowing for this, we are of the opinion that demand for COVID-19 tests, particularly for the travel and leisure industries, will be substantial for a further 18-24 months.

Expansion nationally

Location of LML's laboratory facility in London restricts the ability to offer a "result within 24 hours" to south-east England. In order to offer national coverage, significant investment in facilities, instrumentation and personnel would be necessary. However, given the fragmented market, LML could expand its geographical coverage through acquisition.

Share liquidity

An investment in the company might not be suitable for all recipients of this publication. Given that the majority of shares are tightly held by the founders and there will only be a small free float, market liquidity is likely to be poor, making it potentially difficult for investors to buy and sell the shares.

Glossary

B2B	Business-to-business
BMI	Body mass index
COVID-19	A novel coronavirus that causes the disease known as “COVID-19” or “coronavirus” (SARS-CoV-2)
CQC	Care Quality Commission – the independent regulator of health and social care in England
DTC	Direct-to-consumer
FBC	Full blood count
GP	General practitioner
HCP	Healthcare professional
IVD	*In vitro* diagnostics
LIMS	Laboratory information management system
NHS	National Health Service
PA	Patient Access
PCR	Polymerase chain reaction – a technique used to amplify, or make many copies of, a specific target region of DNA
POC	Point-of-care
QCA	Quoted Companies Alliance
SARS-CoV-2	Severe Acute Respiratory Syndrome Coronavirus 2
UKAS	United Kingdom Accreditation Service –the UK’s sole national accreditation body

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The full detail is on page 26 of the full directive, which can be accessed here: https://ec.europa.eu/transparency/regdoc/rep/3/2016/EN/3-2016-2031-EN-F1-1.PDF

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