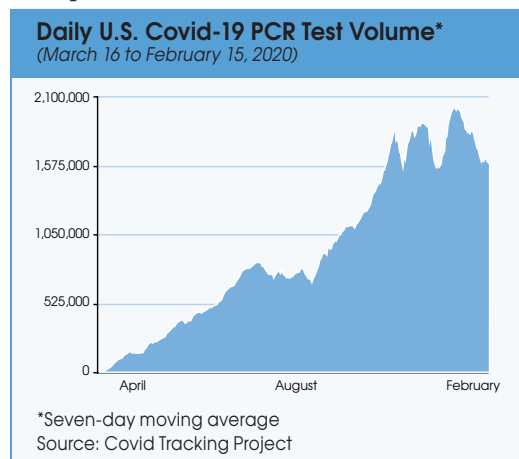




Covid-19 PCR Test Volumes Declining Rapidly

As of mid-February, the average daily volume of Covid-19 PCR testing performed in the United States was averaging 1.6 million tests per day, down 24% from the 2.1 million peak in mid-January, according to the Covid Tracking Project. Declines in Covid-19 testing, positivity rates, confirmed cases, hospitalizations and deaths are now widespread throughout the United States. The CDC's latest estimates show that more than 100 million Americans have had the virus (see pages 13-14).



New UHC Provider Requirement Targets High-Cost Hospital Labs

Effective July 1, UnitedHealthcare (UHC) says that outpatient clinical lab tests and anatomic pathology service for its fully-insured commercial plan members will only be reimbursed to labs that have qualified as Designated Diagnostic Providers. The new benefit design is aimed at reducing out-of-network lab utilization and switching in-network hospital-based outreach labs to separate lower-paying ancillary provider lab fee schedules for services provided to nonpatients. *Continued on page 3.*

Telemedicine Poses Challenges For Labs

Telemedicine isn't new, but the pandemic has greatly accelerated its adoption. State and local government restrictions on certain medical procedures along with stay-at-home orders in effect last spring caused an initial surge in telemedicine. And even now that doctors' offices are open, some patients have avoided in-person appointments due to Covid-19 fears. The problem for labs is that, unlike an in-person office visit, patient blood, urine or saliva specimens can not be collected during a telemedicine visit and many of these lab test orders never get completed. In an attempt to increase patient compliance, OPKO's BioReference Labs is launching a home specimen collection service under the brand name Scarlet Health. *Continued on page 2.*

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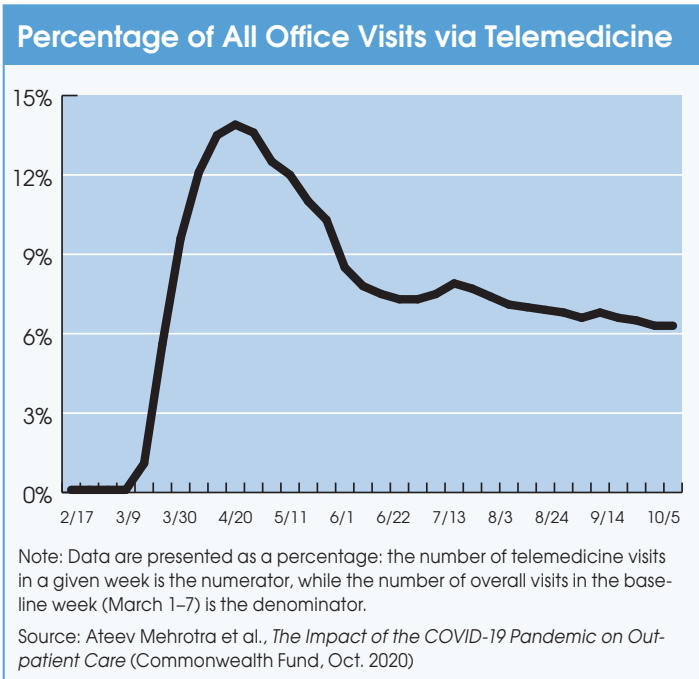
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Telemedicine Poses Challenges For Labs *(cont'd from page 1)*

The percentage of all office visits via telemedicine jumped to as high as 14% in April 2020 from only 0.1% prior to the pandemic, according to a study by the Commonwealth Fund. Telemedicine visits have declined from the April peak, but continue to be well above pre-pandemic levels.

Telemedicine visits are most common for behavioral health (41% of visits), endocrinology (14%) and rheumatology (14%). It's used least often for ophthalmology (0%), otolaryngology (1%) and orthopedics (1%).

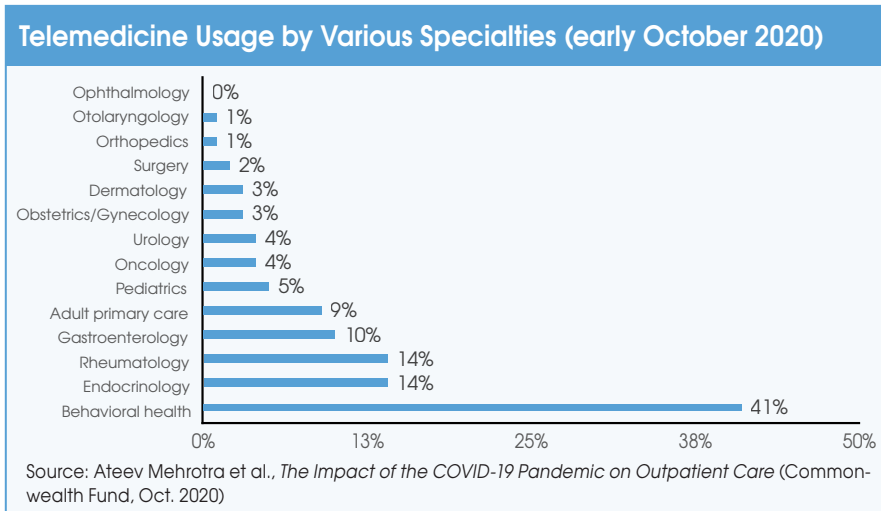
There are no official statistics that describe the percentage of “no shows” for lab test orders placed from telemedicine visits, but *Laboratory Economics* estimates that it may be as high as 25% to 50%.



BioReference’s Scarlet Health service has been in beta-testing throughout the New York City area for more than six months, according to Chief Digital Officer Richard Schwabacher. BioReference worked with insurance companies, large medical groups and concierge medical service companies to run the telemedicine pilot. Based on internal data, Schwabacher says that telemedicine patients who used Scarlet Health had approximately a 95% compliance rate for getting their specimen collected.

To use Scarlet, patients will obtain a link after a telemedicine visit with their doctor. After confirming the lab tests needed, a patient will verify his/her identity and schedule a day and

time, and choose their preferred location (home or office) for a BioReference phlebotomist to visit and collect the specimen. Specimens are sent to a BioReference lab for testing and results are



securely shared online with the patient and the ordering doctor. Schwabacher says the service is a cloud-based application that requires no software or asset integration on the part of ordering physicians or patients.

BioReference now plans to expand Scarlet Health to additional cities.

UHC Targets High-Cost Hospital Labs *(cont'd from page 1)*

UHC began notifying its in-network hospitals, independent labs and pathology groups of the new benefit design in January. In order to become a Designated Diagnostic Provider, labs need to complete a quality questionnaire by February 28. The form includes questions about how each lab bills (institutional/CMS-1450 or non-institutional/CMS-1500), number of PSCs, accreditation, electronic result reporting capability, etc.

The new Designated Diagnostic Provider benefit design does not apply to lab and pathology services provided to hospital inpatients or emergency room services.

However, the new benefit design does apply to outpatient and outreach lab and pathology services. Existing in-network hospital labs, independent labs and pathology groups must now also become Designated Diagnostic Providers in order to be reimbursed for outpatient and outreach lab and pathology services effective July 1.

If an outpatient/outreach lab test from a UHC fully-insured commercial member is performed by a non- Designated Diagnostic Provider, whether in-network or out-of-network, then the claim will be denied as “non-covered” and the member will be responsible for payment.

Furthermore, UHC says that hospital outreach labs that serve non-patients will now also be required to contract as ancillary service providers and will be paid rates similar to independent labs.

“Some labs tests can cost much as 1000 percent more in an outpatient hospital lab than in a free-standing lab. These egregious rates mean higher out-of-pocket costs for members and increased costs for employers. The new benefit designs will protect our members from higher lab costs by providing access to laboratories that meet broadly recognized quality and efficiency standards,” according to Tracey Lempner, Director of Communications for UnitedHealthcare.

Lempner provided the following cost comparisons based on the average rates that UHC pays hospital labs versus independent labs.

- **Comprehensive metabolic panel** done in an outpatient facility can cost \$156 and at an independent lab costs \$10. For members that require monitoring on a quarterly basis, the annual cost difference is \$624 compared to \$40.
- **Blood glucose test** can cost \$80 in an outpatient facility and \$5 at an independent lab. For members that require monthly testing, the annual cost difference is \$960 compared to \$60.
- **Rapid strep test** can cost \$56 in an outpatient facility and \$8 at an independent lab. For a family with two symptomatic children that require testing, the cost difference is \$112 compared to \$16.

Right now, UHC is applying the new Designated Diagnostic Provider benefit change only to its fully-insured commercial plans. As of December 31, 2020, UHC covered 7.9 million members in fully-insured commercial health plans. Lempner says the same benefit design change could potentially be made available to 18.3 million members at self-insured employer group health plans that UHC helps manage.

UHC says that its existing Preferred Laboratory Network, which offers zero out-of-pocket cost lab tests to members in certain commercial plans, remains in effect. The PLN currently includes BioReference Labs, Invitae, LabCorp, Mayo Clinic Laboratory, Millennium Health and Quest Diagnostics.

AHA Urges CMS To Stop UHC's Designated Diagnostic Provider Policy

“We urge CMS to disallow the implementation of the [UnitedHealthcare] DPP policy in products that it oversees,” said the American Hospital Association (AHA) in a February 4 letter to Elizabeth Richter, Acting Administrator for the Center for Medicare & Medicaid Services (CMS).

The AHA letter noted that if a UHC member obtains lab tests at a non-designated laboratory—even those “in-network”—coverage for their services will be denied, and the patient will be responsible for payment in full. “In short, the DPP program is attempting to redefine the concept of an ‘in-network’ provider and limit patient access to a much smaller pool of laboratory service providers.”

AHA warned that UHC’s DPP policy will create confusion for its members and providers. “There is a very high risk that a clinician will inadvertently direct a patient to seek care from a non-designated laboratory provider with the financial consequences falling to the patient.”

AHA argued that UHC’s DPP policy evades federal rules by claiming unilaterally and after an enrollee has agreed to the terms of a health plan contract that the services, while “in-network,” are not covered at this particular site of care. “This program will mislead enrollees with inaccurate portrayals of their access to care and put them at risk of additional health care costs when they are unable to keep up with UnitedHealthcare’s attempts to manipulate familiar insurance terms like “in-network” and “covered.”

UHC spokesperson Tracey Lempner says that UHC is updating information in the benefit plan descriptions for its fully-insured commercial plans and launching an extensive campaign to inform affected providers and members of the new DPP policy. In addition, Lempner said that UHC educational outreach is targeting patients that have used out-of-network labs over the past 12 months.

Finally, Lempner says that UHC plans to expand its DPP benefit design to include major radiology services (MR, CT, PET/nuclear medicine) in 2022.

UHC’s DPP benefit design changes—for both laboratory and radiology—are subject to state regulatory approval.

UnitedHealth Reports Strong Financial Results For 2020

UnitedHealth Group (Minnetonka, MN) reported net earnings of \$15.4 billion for full-year 2020, up from \$13.8 billion in 2019; total revenue increased by 6% to \$257 billion. UnitedHealth’s full-year 2020 medical care ratio (MCR) of 79.1% declined from 82.5% in 2019. The MCR, also referred to as medical loss ratio, is calculated by dividing total medical expenses paid by an insurer by the total insurance premiums it collected.

Quest Diagnostics Renews EmblemHealth Contract

Quest Diagnostics has renewed its long-standing contract to provide comprehensive clinical laboratory services to EmblemHealth (New York City), which covers a total of 3.2 million members in the New York City area. Quest will remain the sole national laboratory for all EmblemHealth Health Insurance Plan of Greater New York (HIP) products, as well as affiliate ConnectiCare, in 2021. In addition, Quest says that it will continue to work closely with AdvantageCare Physicians (ACPNY), EmblemHealth’s multispecialty medical practice, and operate patient service centers in nine of their locations.

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Spotlight Interview with HNL Lab Medicine's Ronald Walsh

HNL Lab Medicine (Allentown, PA), which has more than 60 patient service locations throughout Pennsylvania and New Jersey, typically generates more than 60 million clinical and anatomic pathology results for about 3 million patients and 12,000 healthcare providers each year. Lehigh Valley Health Network is the majority owner of HNL Lab Medicine. *Laboratory Economics* recently spoke with HNL's Chief Medical Officer Ronald Walsh, MD.



Ronald Walsh,
MD

How many Covid-19 PCR tests is HNL doing per day and are you able to meet the demand?

We are currently receiving 2,000 to 3,000 Covid-19 PCR specimens per day on weekdays and about 1,000 to 1,500 per day on the weekend. Given our in-house testing capacity is now approximately 4,000 samples per day, so we are able to meet the current demand.

What are the latest trends you're seeing in Covid-19 positivity rates?

PCR testing demand for symptomatic individuals has been decreasing over the past few weeks. Our positivity rate during the first week of January was approximately 20%. In early February, it had declined to 8%.

Which analyzers do you use?

Early on in the pandemic, we had to diversify to overcome supply chain challenges. This led us to validating multiple testing platforms. We perform Covid-19 PCR testing in two departments at HNL. In molecular, we have a Roche 6800 and an 8800, as well as a Hologic Panther. We're also using our Roche Lifecycler z480 to run a Siemens PCR kit. In microbiology, we have Cepheid, BD MAX, Meridian Biosciences Revogene and Diasorin Simplexa instruments, along with the Biofire respiratory panel that includes Covid. If we were fully supplied, we could perform between 7,000 and 8,000 Covid PCR tests per day.

What is your average turnaround time?

We offer a rapid Covid PCR test option for cases where clinical management will change or help with hospital operations. The turnaround time for this rapid test is one to three hours. For routine in-hospital testing, samples are sent to our core lab, and the goal turnaround time is within 24 hours. For samples coming from the ambulatory setting, the goal turnaround time is within 48 hours from receipt in the lab.

Which supplies still are in short supply?

PCR cards, plastic pipette tips and test kits for certain platforms. Vendors are able to forecast about a month out what we will be receiving.

Is HNL doing pooled sample Covid-19 testing?

We are not offering pooling at present, but we are continuing to evaluate whether pooling makes sense. One essential piece of equipment is a liquid handler system, as this would automate the process. We have purchased this device but the lead time to delivery is still a few months away.

How many antibody tests do you do per day?

Demand is lower than expected, although we can facilitate up to 7,000 antibody tests per day.

Have non-Covid-19 test volumes bounced back?

Yes, our routine testing is back in the mid-90s compared to pre-pandemic levels. The initial drop was about 60%. It took about three months to start coming back up.

What impact has the pandemic had on HNL lab revenues?

There really has been no significant negative impact because our main owner – Lehigh Valley Health Network – has bounced back, so revenues have been stable. We are set to meet our revenue goals for the year. Our fiscal year runs June to July, so we are about halfway through the current fiscal year.

Has the vaccine been made available to lab employees yet?

Yes, all of our employees have been provided the opportunity to be vaccinated. About 55% have received it so far. We are trying to increase the compliance rate and trying to make it more convenient. Vaccination is not required, but we are expecting those numbers to go up.

Is your lab using the rapid antigen Covid-19 test?

To this point, we have not offered it due to the decreased sensitivity, but we are considering a high-throughput rapid antigen test for surveillance testing because we are getting a number of requests from colleges for surveillance testing. We expect to have the Beckman Coulter platform online very soon.

What are your projections for HNL in the coming year?

We'll continue to see a demand for Covid PCR testing for the rest of this year. If the Biden administration's plan of 100 million vaccinations in the first 100 days occurs, plus the natural infection rate, we will reach herd immunity sometime this year, and Covid testing demand will decrease. Overall, we are growing as a lab. Lehigh Valley Health Network is adding more campuses, so we anticipate additional demand for testing.

Update Interview With Eurofins Viracor's Steven Kleiboeker

Eurofins Viracor Laboratories (Lee's Summit, MO) is a specialty laboratory focused on infectious disease, allergy, immunology and transplant testing. Viracor is a 100% subsidiary of Eurofins Scientific (Luxembourg), which acquired the company for \$255 million in 2014. *Laboratory Economics* first spoke with Viracor's Steven Kleiboeker, PhD, Vice President of Research and Development, last April (see LE, April 2020). Below, Dr. Kleiboeker provides an update on Viracor's Covid-19 testing and the pandemic.



Steven
Kleiboeker, PhD

Can you describe the current status of Viracor's Covid-19 testing?

We first started Covid-19 testing in mid-March 2020. Volumes were initially limited by supply constraints. Viracor and its sister lab Diatherix Eurofins in Alabama were performing at a combined maximum capacity of a few thousand tests per day.

Over the past 10 months, manufacturers have ramped up and the supply situation is much better.

Eurofins is now performing an average of roughly 30,000 Covid-19 PCR tests per day at 20 different labs across the country with the capacity to perform up to 130,000 tests per day.

In addition, we expect to launch a PCR typing test in the U.S. this month that will help identify Covid-19 variants, including the U.K. and South African strains. This test is expected to be used primarily for public health surveillance.

Which new strain is the most worrying and why?

At this point, the South African and Brazilian strains may be the most concerning due to their potential reduced control by current vaccines.

Can you describe your new direct-to-consumer testing initiative?

In November, we introduced an at-home Covid-19 PCR test service through our direct-to-consumer brand empowerDX. This service is designed for asymptomatic or mildly-ill patients. The test can be ordered online and we FedEx a nasal swab collection kit and a return FedEx envelope. Testing is done at Viracor's lab in Missouri. Turnaround time, including shipping time, is two to three days. Insurance is billed directly, or patients can pay \$99 out-of-pocket.

In addition, we are getting ready to launch a vitamin D test. In the coming months, we will also be launching other wellness, women's and sexual health at-home tests.

The number of new Covid-19 cases in the United States peaked in early January and is now rapidly declining. Why?

There have been no published studies yet, so at this point it's pure theory and speculation, but herd immunity by natural infection might be playing a role. The number of actual coronavirus cases in the United States is far greater than the number of PCR-positive confirmed cases. Different models have estimated that the number of actual cases may be between three times and ten times greater than the number of confirmed U.S. cases [28 million as of February 12].

In particular, a high portion of the population that has not adhered to masking and social distancing precautions may have already been infected. Some level of herd immunity in this population of less cautious people combined with masking and social distancing among the rest of the population could be the reason why cases began declining in January. The roll out of vaccinations should accelerate the decline.

Have Eurofins Viracor employees been vaccinated yet?

We have about 450 full-time and 200 part-time employees at our lab and offices in Lee's Summit. We have not been officially tracking, but my guess is that the majority have gotten the vaccine. I've gotten both doses of the Pfizer vaccine. I'm not aware of any employees that have suffered severe adverse reactions from the vaccine.

Labs have created a tremendous amount of Covid-19 PCR testing capacity over the past year. What will happen to this capacity as the pandemic and related testing demand subsides?

There will continue to be some volume of Covid testing even long after the pandemic has ended. For example, we still do some Zika virus testing even though that outbreak ended in 2016. Some portion of Covid-19 PCR testing capacity may also be redirected to more testing for the flu, respiratory syncytial virus (RSV) and common cold viruses. And finally, there simply may be a large amount of PCR testing capacity that can't find a job.

Can you describe the new lab being built in Lenexa, Kansas?

Eurofins Viracor just broke ground on the construction of a new 110,000-square-foot lab and office in Lenexa, Kansas. We expect construction to be completed in March 2022. Most of the testing now performed at our Lee's Summit lab (located 23 miles away), including our new oncology testing division, will be shifted into the new lab, which will have 450 FTEs. The Lenexa lab will utilize Lean Six Sigma best practices and include automation of liquid handling and aliquoting.

Quest Reports Record Full-Year 2020 Financial Results

Propelled by Covid-19 testing, Quest Diagnostics reported a record high net income of \$1.431 billion for full-year 2020, up 67% from \$858 million in 2019. Quest's overall revenue increased by 22% to \$9.437 billion, with acquisitions contributing approximately 2% to revenue growth. Quest's average revenue per requisition increased by 16% to an estimated \$51 per req. A summary of key topics discussed by CEO Steve Rusckowski and CFO Mark Guinan on a February 4 conference call follows.

Covid-19 Testing

Quest's peak in Covid-19 PCR testing occurred in early December when it was averaging roughly 165,000 daily tests. Rusckowski anticipates that Quest will average roughly 100,000 Covid-19 PCR tests per day during the first half of 2021 with volume dropping off throughout the year as more people get vaccinated. Guinan said that Quest's average collected revenue per Covid-19 PCR was more than \$90 and that pricing competition was greatest in the client bill market. In addition, Quest is currently performing about 15,000 Covid-19 antibody tests per day. Rusckowski said that Quest will soon introduce a quantitative antibody test for the spike protein to check for vaccine effectiveness.

Non-Covid Test Volumes

A recovery in Quest's base testing volume stalled at the end of November and into December due to a surge in Covid-19 cases, but is expected to recover to nearly 100% of pre-pandemic levels by the end of 2021, according to Rusckowski. In the fourth quarter of 2020, Quest's base testing volumes were down approximately 8% versus a year earlier.

Hackensack Meridian Health Lab Management Agreement

"The relationship we announced in the fourth quarter with Hackensack Meridian Health system is the largest [hospital lab deal] we've ever done. And I can tell you, it took a long time to get there," said Rusckowski. "We worked with Hackensack and demonstrated to them that we can perform the same work they do in their lab at a better cost and better value," added Guinan. [See also *Laboratory Economics*, January 2021]

Quest Diagnostics Financial Summary (\$ millions)

	2020	2019	% Chg
Total revenue	\$9,437	\$7,726	22.1%
Lab testing revenue	9,139	7,405	23.4%
Other revenue*	298	321	-7.2%
Operating cash flow	2,005	1,243	61.3%
Capital expenditures	418	400	4.5%
Free cash flow	1,587	843	88.3%
Pretax income	1,884	1,076	75.1%
Net income	1,431	858	66.8%
Diluted EPS	\$10.47	\$6.28	66.7%
Est'd number of requisitions	186.6	175.0	6.6%
Est'd revenue per requisition	\$50.57	\$44.15	16.2%
# Employees	49,000	46,000	6.5%
Avg. revenue per employee	\$192,592	\$167,957	14.7%

*Other revenue includes clinical trials testing, info tech services and testing for life insurance companies

Source: Quest Diagnostics and LE's estimates for number of reqs and average revenue per req.

What will labs do with excess PCR testing capacity as the pandemic recedes?

"For other commercial laboratories and hospitals to use that [PCR testing] capacity to get into competing with us, for example in women's health, that's a long stretch," noted Rusckowski. "There's a lot more to getting a client to flip over than the lab's capacity; you have to have a salesforce, logistic capabilities, you have to do electronic interfaces, you have to work with the physicians, you have to be in a contract with the health plans."

Return of Provider Relief Funds

In the fourth quarter, in a voluntary act of good will, Quest returned \$138 million of provider relief funds it had received from the government under the CARES Act last spring and summer.

LabCorp Reports Record Full-Year 2020 Financial Results

LabCorp (Burlington, NC) reported record net income of \$1.556 billion for the full-year 2020, up 89% from \$824 million in 2019. LabCorp's overall revenue increased by 21% to \$14 billion in 2020.

Revenue from LabCorp's lab testing business increased by 32% to \$9.3 billion in full-year 2020, including 8% from increased volume and 24% from increased average revenue per requisition.

On February 11, LabCorp held a conference call with analysts and investors. Here are some comments on a few key topics from CEO Adam Schechter.

Covid-19 Testing

LabCorp generated revenue of \$2.78 billion from Covid-19 testing in 2020. It performed approximately 31 million Covid-19 PCR tests and four million antibody tests. LabCorp received an average reimbursement rate of about \$90 per Covid-19 PCR test. For 2021, Schechter is anticipating that LabCorp's Covid-19 testing revenue will decline by between 35% and 50%, while its base non-Covid testing business will increase by between 11% and 14%.

Acquisitions

Hospital outreach labs and independent lab acquisitions "are accretive in the first year. Typically, you return your cost of capital in about two years, and we know how to integrate those. We are seeing more opportunities for those. We're spending a lot more time and discussions with various hospitals and local laboratories. And I can tell you, even as a senior management team, we're spending a lot more time in those discussions ourselves. So I feel good that there will be multiple opportunities as we go through this year," said Schechter.

Telemedicine

Schechter noted that certain regulations that have been lifted during the pandemic, such as practicing telemedicine over state lines, are likely to stay lifted. "I do believe it's here to stay."

LabCorp Financial Summary (\$ millions)

	2020	2019	% Chg
Total revenue	\$13,978.5	\$11,554.8	21.0%
LabCorp Diagnostics	9,253.4	6,999.9	32.2%
Covance Drug Development	4,877.7	4,578.1	6.5%
Operating cash flow	2,135.3	1,444.7	47.8%
Capital expenditures	381.7	400.2	-4.6%
Free cash flow	1,753.6	1,044.5	67.9%
Pretax income	2,219.1	1,104.9	100.8%
Net income	1,556.1	823.8	88.9%
Diluted EPS	\$15.88	\$8.35	90.2%
Est'd number of requisitions	172.8	160.0	8.0%
Est'd revenue per requisition	\$54.56	\$44.00	24.0%
# Lab employees	42,000	39,000	7.7%
Avg. revenue per lab employee	\$220,319	\$179,485	22.8%

Source: LabCorp and LE's estimates for number of reqs and average revenue per req.

UnitedHealth's Preferred Laboratory Network

"I would have thought we'd make more progress together. But with the distraction of Covid, it's been nearly impossible to do that. I'm hopeful that we'll be able to get back to that when things normalize a bit," said Schechter.

Return of Provider Relief Funds

In the fourth quarter, in a voluntary act of good will, LabCorp returned \$132 million of provider relief funds it had received from the government under the CARES Act last spring and summer.

Hospital-Owned Independent Labs Outpace Market

Billing for most hospital laboratory outreach programs is managed by their hospital's finance department using the hospital's National Provider Identifier (NPI) number and tax ID number. However, there are approximately 100 hospital-owned laboratories that operate with their own NPI and tax ID numbers and therefore manage their own billing.

Medicare Part B carrier payment data from CMS shows that the top 50 hospital-owned labs (with their own NPI) grew their Part B carrier revenue from \$319 million in 2015 to \$364 million in 2018—an annual growth rate of 4.5%. This was higher than the overall 2.6% annual growth rate in total Medicare Part B carrier payments made to all clinical labs over the same time frame.

Among the top three hospital-owned independent labs:

Sonora Quest Laboratories (Tempe, AZ), a joint venture owned 51% by Banner Health and 49% by Quest Diagnostics, grew its Part B revenue by 4.9% per year between 2015 to 2018 to reach \$61.3 million.

Northwell Health Laboratories (Long Island, NY), owned by the New York City-area hospital system Northwell Health, increased its Part B revenue by 14.7% per year to reach \$25.1 million in 2018.

ACL Laboratories (West Allis, IL), owned by Advocate Aurora Health Care, grew its Part B revenue by 4% per year to \$24.5 million in 2018.

Top 50 Hospital-Owned Independent Labs & Joint Ventures

Laboratory Name	Owner	Location	Total Medicare Allowed Payment 2018	Total Medicare Allowed Payment 2015	3-Year CAGR % Chg
Sonora Quest Laboratories	Banner Health and Quest Diagnostics	Tempe, AZ	\$61,328,052	\$53,054,083	4.9%
Northwell Health Laboratories	Northwell Health	New Hyde Park, NY	25,108,537	16,629,220	14.7%
ACL Laboratories	Advocate Aurora Health Care	West Allis, WI	24,536,259	21,795,363	4.0%
Diagnostic Laboratory of Oklahoma	Integrus Health and Quest Diagnostics	Oklahoma City, OK	14,567,695	13,001,448	3.9%
Regional Medical Laboratory	St. John Health System	Tulsa, OK	13,892,494	12,517,382	3.5%
HNL Lab Medicine	Lehigh Valley Health Network	Allentown, PA	13,543,052	11,419,897	5.8%
Diagnostic Laboratory Services	The Queen's Health System	Aiea, HI	10,865,234	9,690,266	3.9%
Pacific Diagnostic Laboratories	Cottage Health	Santa Barbara, CA	8,889,563	7,901,602	4.0%
Med Fusion	Purchased by Quest in 2017	Lewisville, TX	8,820,075	1,848,990	68.3%
Mid America Clinical Laboratories	Purchased by Quest in 2020	Indianapolis, IN	8,536,525	8,146,200	1.6%
Quest Diagnostics UPMC JV	UPMC and Quest Diagnostics	Pittsburgh, PA	8,229,038	6,817,253	6.5%
Marshfield Clinic	Marshfield Clinic Health Sys.	Marshfield, WI	8,220,649	9,575,667	-5.0%
Mayo Clinic Jacksonville	Mayo Clinic	Jacksonville, FL	7,894,206	5,605,663	12.1%
CompuNet Clinical Laboratories	Premier Health and Valley Pathologists	Moraine, OH	7,727,372	7,276,212	2.0%
Tricare Reference Laboratories	University of NM Health Sys. and Presbyterian Health	Albuquerque, NM	7,645,594	6,430,806	5.9%
Scripps Health	Scripps Health	San Diego, CA	\$7,590,772	\$7,246,293	1.6%
Professional Clinical Laboratories (dba Alverno Laboratories)	Franciscan Alliance and AMITA Health	Hammond, IN	7,414,864	5,368,902	11.4%
Texas Health Physicians Group	Texas Health	Dallas, TX	6,236,923	5,299,650	5.6%
UCLA Outreach Clinical Laboratory	Regents of The Univ. of Calif.	Panorama City, CA	5,932,918	2,194,617	39.3%
Associated Clinical Laboratories	Local hospitals and Quest	Erie, PA	5,598,709	5,083,824	3.3%
Saint Francis Outreach Services	Saint Francis Health System	Tulsa, OK	5,515,410	4,665,409	5.7%

Laboratory Name	Owner	Location	Total Medicare Allowed Payment 2018	Total Medicare Allowed Payment 2015	3-Year CAGR % Chg
Tri-Cities Laboratory	Purchased by LabCorp in 2017	Kennewick, WA	5,461,718	4,039,043	10.6%
Univ. Hospitals Lab Services Fdn.	Univ. Hospitals of Cleveland	Cleveland, OH	5,429,259	4,806,069	4.1%
ACM Medical Laboratory	Rochester Regional Health	Rochester, NY	5,351,874	3,940,896	10.7%
Nordx	MaineHealth	Scarborough, ME	4,412,640	3,742,895	5.6%
Cotton-O'Neil Clinic Rev. Trust	Stormont Vail Health	Topeka, KS	4,343,461	3,748,052	5.0%
Legacy Laboratory Services	Legacy Health	Portland, OR	4,330,096	3,247,249	10.1%
Mayo Collaborative Services	Mayo Clinic	Rochester, MN	4,276,958	3,479,906	7.1%
Central Iowa Hospital Corp.	Central Iowa Hospital Corp.	Ankeny, IA	4,130,200	1,860,095	30.5%
Meritus Medical Laboratory Llc	Meritus Health	Hagerstown, MD	3,860,155	3,600,937	2.3%
Laboratory Alliance of Central NY	Local hospitals	Liverpool, NY	3,817,718	3,807,335	0.1%
Affiliated Medical Services Lab	Via ChristiHealth System	Wichita, KS	3,719,843	4,215,344	-4.1%
Sutter Valley Medical Foundation	Sutter Valley Medical Fdn.	Sacramento, CA	3,710,015	7,587,429	-21.2%
DMC University Laboratories	Detroit Medical Center	Detroit, MI	3,709,351	4,319,389	-4.9%
Mayo Clinic Arizona	Mayo Clinic	Scottsdale, AZ	3,558,210	3,231,965	3.3%
Inova Laboratories	Inova Health Care Services	Fairfax, VA	3,169,242	548,748	79.4%
Wisconsin Diagnostic Laboratories	Froedtert Health	Milwaukee, WI	3,080,029	4,273,240	-10.3%
Pathology Associates Medical Laboratories (PAML)	Purchased by LabCorp in 2017	Spokane, WA	3,055,611	14,786,632	-40.9%
IHC Health Services	Intermountain Healthcare	Murray, UT	2,905,549	2,285,066	8.3%
Life Laboratories-System Coordinated Services	Trinity Health of New England	Springfield, MA	2,818,856	3,031,960	-2.4%
Sutter Shared Lab	Sutter Health	Livermore, CA	2,574,411	0	NA
Collaborative Laboratory Services	Trinity Health of New England	Hartford, CT	2,257,808	2,832,403	-7.3%
Affiliated Laboratory	Affiliated Healthcare Systems	Bangor, ME	2,229,502	2,220,889	0.1%
Sanford Clinic North	Sanford Health	Fargo, ND	2,176,735	1,980,457	3.2%
University of Miami	University of Miami	Miami, FL	2,043,997	2,755,343	-9.5%
Johns Hopkins University	Johns Hopkins University	Baltimore, MD	1,940,068	1,698,803	4.5%
Sanford Medical Center	Sanford Health	Sioux Falls, SD	1,919,235	1,456,971.78	9.6%
Yale University	Yale University	New Haven, CT	1,914,338	1,533,603	7.7%
Froedtert & The Medical College of Wisconsin Community Phys.	Froedtert Health and the Medical College of Wisconsin	Menomonee Falls, WI	1,793,050	0	NA
Ascension Wisconsin Laboratories	Wheaton Franciscan Healthcare	Milwaukee, WI	1,642,018	2,155,372.72	-8.7%
Total for 50 Hospital-Owned Labs			\$363,725,889	\$318,754,837	4.5%
Grand Total for All 2,842 Clinical Labs			\$5,656,693,925	\$5,243,425,963	2.6%

Source: Laboratory Economics from Medicare Provider Payment Data from CMS for 2015-2018

Lab Stocks Jump 35% To Start 2021

Twenty-two lab stocks have risen by an unweighted average of 35% year to date through February 12. In comparison, the S&P 500 Index is up 5% thus far in 2020. The top-performing lab stocks so far have been DermTech, up 135%; Interpace Biosciences, up 84%; and Biocept, up 65%. Shares of LabCorp are up 17% year to date, while Quest Diagnostics is up 6%.

Company (ticker)	Stock Price 2/12/21	Stock Price 12/31/20	2021 Price Change	Enterprise Value (\$ mill)	Enterprise Value/Revenue	Enterprise Value/EBITDA
LabCorp (LH)	\$238.26	\$203.55	17%	\$28,670	2.1	9.4
Exact Sciences (EXAS)	155.01	132.49	17%	26,590	20.1	NA
Quest Diagnostics (DGX)	126.02	119.17	6%	20,260	2.2	8.4
Sonic Healthcare (SHL.AX)*	34.29	32.15	7%	19,770	2.9	13.9
Guardant Health (GH)	179.10	128.88	39%	15,360	56.6	NA
Natera (NTRA)	124.36	99.52	25%	10,080	27.9	NA
Invitae (NVTA)	51.86	41.81	24%	9,860	40.2	NA
NeoGenomics (NEO)	59.88	53.84	11%	6,830	16.1	346.7
Veracyte (VCYT)	75.73	48.94	55%	4,700	41.7	NA
CareDx (CDNA)	89.37	72.45	23%	4,210	24.8	NA
Opko Health (OPK)	5.61	3.95	42%	4,000	3.4	975.7
Myriad Genetics (MYGN)	30.48	19.77	54%	2,420	4.1	NA
Castle Biosciences (CSTL)	95.54	67.15	42%	2,200	35.0	NA
DermTech Inc. (DMTK)	76.24	32.44	135%	1,890	352.4	NA
Aspira Women's Hlth (AWH)	9.13	6.71	36%	1,000	222.1	NA
Biodesix (BDSX)	24.79	20.16	-37%	629	23.5	NA
Progenity (PROG)	5.60	5.31	5%	319	4.0	NA
Exagen (XGN)	18.20	13.20	38%	196	5.0	NA
Enzo Biochem (ENZ)	3.27	2.52	30%	143	1.7	NA
Biocept (BIOC)	7.32	4.44	65%	84	7.8	NA
Interpace Biosciences (IDXG)	5.77	3.14	84%	70	2.6	NA
Psychemedics (PMD)	7.33	5.09	44%	48	1.9	NA
Unweighted Averages			35%	\$159,327	40.8	270.8

*Sonic Healthcare's figures are in Australian dollars

Source: *Laboratory Economics* from company reports and Capital IQ

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U.S. Covid-19 Statistics & Analysis

The latest analysis from the CDC estimates that only 1 out of 4.6 total Covid-19 infections have been reported (<https://www.cdc.gov/coronavirus/2019-ncov/cases-updates/burden.html>). This suggests that an estimated 38% of the U.S. population had been infected with Covid-19 as of February 14. The states with the highest percentage of the population that has had Covid-19 are North Dakota (59%), South Dakota (57%), Rhode Island (52%) and Utah (52%). States with the lowest percentage are Hawaii (9%), Vermont (10%), Maine (15%), Oregon (16%) and Washington (20%).

Separately, the personal finance website WalletHub compared the 50 states and the District of Columbia across 14 key metrics in order to determine the states with the fewest coronavirus restrictions and those with the most restrictions (<https://wallethub.com/edu/states-coronavirus-restrictions/73818>).

The study looked at 14 relevant metrics (e.g., face mask requirements, travel restrictions, large gathering restrictions, school closings, restaurant and bar closings, etc.). The study and metrics were guided by a panel of professors from University at Buffalo, Furman University, University of Kentucky, Rice University, University of Denver and California State University-San Marcos.

The five states (IA, OK, SD, AR, FL) with the fewest restrictions had a weighted-average population infection rate of 42% and an average of 1,587 Covid-19 deaths per million.

The five states (CA, VA, MA, DC, NM) with the most restrictions had a weighted-average population infection rate of 38% and an average of 1,278 Covid-19 deaths per million.

U.S. Covid-19 Statistics (as of February 14, 2021)

State	Population	Confirmed Cases	Estimated Cases	% Pop that has been infected	Covid-19 Deaths	Deaths/1 mill pop
New Jersey	8,882,190	743,819	3,421,567	39%	22,440	2,526
New York	19,453,561	1,568,969	7,217,257	37%	45,947	2,362
Massachusetts	6,892,503	555,895	2,557,117	37%	15,424	2,238
Mississippi	2,976,149	287,436	1,322,206	44%	6,462	2,171
Rhode Island	1,059,361	120,821	555,777	52%	2,290	2,162
South Dakota	884,659	110,205	506,943	57%	1,838	2,078
Connecticut	3,565,287	267,337	1,229,750	34%	7,381	2,070
Arizona	7,278,717	795,323	3,658,486	50%	14,948	2,054
Louisiana	4,648,794	418,585	1,925,491	41%	9,276	1,995
Alabama	4,903,185	480,931	2,212,283	45%	9,242	1,885
North Dakota	762,062	98,551	453,335	59%	1,431	1,878
Pennsylvania	12,801,989	899,476	4,137,590	32%	23,190	1,811
Indiana	6,732,219	647,657	2,979,222	44%	12,149	1,805
Illinois	12,671,821	1,160,523	5,338,406	42%	22,087	1,743
Arkansas	3,017,804	312,562	1,437,785	48%	5,252	1,740
New Mexico	2,096,829	180,289	829,329	40%	3,516	1,677
Iowa	3,155,070	329,098	1,513,851	48%	5,236	1,660
Michigan	9,986,857	628,956	2,893,198	29%	16,119	1,614

State	Population	Confirmed Cases	Estimated Cases	% Pop that has been infected	Covid-19 Deaths	Deaths/1 mill pop
Tennessee	6,829,174	756,071	3,477,927	51%	10,902	1,596
South Carolina	5,148,714	487,293	2,241,548	44%	7,998	1,553
Nevada	3,080,156	287,836	1,324,046	43%	4,694	1,524
Kansas	2,913,314	288,705	1,328,043	46%	4,376	1,502
Georgia	10,617,423	962,808	4,428,917	42%	15,850	1,493
Texas	28,995,881	2,569,324	11,818,890	41%	41,406	1,428
Ohio	11,689,100	937,541	4,312,689	37%	16,340	1,398
District of Columbia	705,749	38,918	179,023	25%	979	1,387
Florida	21,477,737	1,821,937	8,380,910	39%	28,683	1,335
Delaware	973,764	82,672	380,291	39%	1,282	1,317
Missouri	6,137,428	512,926	2,359,460	38%	8,022	1,307
Maryland	6,045,680	370,983	1,706,522	28%	7,554	1,249
Montana	1,068,778	97,401	448,045	42%	1,327	1,242
West Virginia	1,792,147	127,282	585,497	33%	2,201	1,228
California	39,512,223	3,465,979	15,943,503	40%	46,855	1,186
Minnesota	5,639,632	472,791	2,174,839	39%	6,437	1,141
Wyoming	578,759	53,086	244,196	42%	647	1,118
Wisconsin	5,822,434	554,800	2,552,080	44%	6,161	1,058
Nebraska	1,934,408	197,027	906,324	47%	2,002	1,035
Colorado	5,758,736	412,983	1,899,722	33%	5,814	1,010
Idaho	1,787,065	167,483	770,422	43%	1,803	1,009
Oklahoma	3,956,971	412,276	1,896,470	48%	3,994	1,009
North Carolina	10,488,084	818,724	3,766,130	36%	10,453	997
Kentucky	4,467,673	387,090	1,780,614	40%	4,272	956
New Hampshire	1,359,711	70,505	324,323	24%	1,130	831
Virginia	8,535,519	549,999	2,529,995	30%	7,012	822
Washington	7,614,893	330,998	1,522,591	20%	4,746	623
Utah	3,205,958	360,584	1,658,686	52%	1,790	558
Oregon	4,217,737	150,034	690,156	16%	2,137	507
Maine	1,344,212	42,529	195,633	15%	649	483
Alaska	731,545	54,282	249,697	34%	280	383
Vermont	623,989	13,677	62,914	10%	189	303
Hawaii	1,415,872	26,810	123,326	9%	425	300
Puerto Rico	3,386,941	172,797	794,866	23%	1,915	565
U.S. Totals	331,626,464	27,662,584	127,247,886	38%	484,553	1,461
Five most restrictive states (CA, VA, MA, DC, NM)	57,742,823	4,791,080	22,038,968	38%	73,786	1,278
Five least restrictive states (IA, OK, SD, AR, FL)	32,492,241	2,986,078	13,735,959	42%	51,564	1,587

Source: *Laboratory Economics* from CDC, Worldometers.com and WalletHub.com