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LABORATORY ECONOMICS

Competitive Market Analysis For Laboratory Management Decision Makers

LAB INDUSTRY BRACES FOR NEW CLFS BASED ON PRIVATE-PAYER RATES

CMS is scheduled to release its proposed rates for the 2018 Medicare Clinical Laboratory Fee Schedule (CLFS) by the end of the month. The new rates will be based on private-payer data supplied primarily from the nation's largest commercial labs.

Lab industry trade groups have lobbied for a delay so that hospital lab pricing data can be included in the calculations. However, as recently as July 31, CMS officials had stated they are on track to release a new CLFS this month (see *LE*, August 2017).

Most test codes on the CLFS are expected to get cut by the maximum allowed 10% in 2018 and could ultimately be lowered by as much as 30% to 35% over the next 3-5 years (*see article below*).

HOW LOW COULD MEDICARE RATES GO?

California's Medi-Cal lab fee schedule has been pegged to private-payer rates for the past three years and provides a reasonable estimate as to the bottom floor for how low the Medicare CLFS could fall over the next few years. The California Department of Health Care Services recently completed its third year of analyzing private-payer payment data collected from 124 labs. Based on this information, Medi-Cal's lab test reimbursement rates have been set at an average of approximately 64% of national Medicare rates effective July 1, 2017 through June 30, 2018.
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UNITED PICKS BEACONLBS TO HELP MANAGE NATIONAL PRIOR AUTHORIZATION PROGRAM

UnitedHealthcare says LabCorp's BeaconLBS will register participating labs and manage the online notification/prior authorization request system for its new national lab benefit management program for genetic and molecular tests. The program was initially scheduled to begin October 1 (see *LE*, June 2017), but has been delayed a month and will start November 1. Physicians ordering genetic or molecular testing, including BRCA1/2, hereditary cancer panels, prenatal screening and pharmacogenomic testing will be required to complete the prior authorization process.
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UNITED PICKS BEACONLBS (*cont'd from page 1*)
United says the prior authorization program applies to its fully-insured commercial members throughout the United States (approximately 7.7 million members). The only exception is Florida and Texas, where United is piloting a separate more comprehensive lab benefit management program also managed by LabCorp's BeaconLBS.

Under the new national program, labs were required to register with BeaconLBS by September 15.

After November 1, care providers ordering from a comprehensive list covering hundreds of genetic and molecular tests (*see table*) must complete the prior authorization process. The participating laboratory will determine if an authorization has been received. The lab that was selected by the care provider will be able to view the authorization record on-line. United will only authorize payment for those genetic and molecular tests performed by labs registered with BeaconLBS.

United's National Preauthorization Test List

- Tier 1 Molecular Pathology Procedures
- Tier 2 Molecular Pathology Procedures
- Genomic Sequencing Procedures
- Multianalyte Assays with Algorithmic Analyses that include Molecular Pathology Testing

These CPT codes:

- 0001U
- 0004M-0008M
- 81161-81421
- 81423-81479
- 81507
- 81519
- 81545-81599

Source: UnitedHealthcare

Labs are not permitted to submit prior authorization for a test on behalf of a provider; that needs to be done by the provider ordering the test, according to a United spokesperson.

That is an important distinction because the laboratory will have the burden of getting the ordering provider to comply and provide the authorizations needed to get paid for their services, Deb Larson, Executive Vice President at TELCOR Inc. (Lincoln, NE), tells *Laboratory Economics*. She notes that some payers requiring prior authorization allow the laboratory to obtain the PA directly from the payer, up to 30 days after service, and use the obtained authorization to submit the claim. "All of our lab clients that have to comply with the United/BeaconLBS requirements feel that it does impact their reimbursements, as well as increase their revenue cycle costs," notes Larson.


Deb Larson

Similarly, Lale White, Chief Executive at XIFIN Inc. (San Diego, CA), notes that genetic testing labs are encountering a combination of both medical and logistical challenges around prior authorization requirements. In the case of genetic testing (i.e. somatic mutations) where the physician needs information right away to determine if a patient may or may not respond to a certain therapy, adding a prior authorization process that could take days or weeks means the patient may not get the correct care in a timely way.

Meanwhile, White notes that for certain hereditary genetic tests, a patient and clinician may not need the information immediately, and a prior authorization process may be clinically reasonable. However, she says there are still logistical challenges that create additional administrative and an-


Lale White

cillary costs for all parties when external laboratory testing is involved. For instance, a patient sample is taken during their visit when the physician determines a certain genetic test should be ordered. The sample is sent to the outside lab who determines a prior authorization is required. CMS and most industry guidelines recognize sample collection date as the date of service (DOS). Even when a pre-authorization is obtained before the test is performed, the DOS is the collection date, so when the claim is filed the payer denies the claims as pre-authorization received subsequent to DOS, explains White.

"If payers were willing to allow labs to obtain prior authorization in a standardized and timely electronic format, such as the 278 electronic transaction that is utilized for many non-genetic services, and allow the PA to be granted within a certain timeframe after the sample collection date, a prior authorization process would be more feasible. However, the current processes are inherently lengthy and manual for all parties involved including the Payer. So passing these requirements in a way that doesn't establish specific criteria for the provision of a pre-authorization by utilizing a standard 278 transaction is damaging to proper patient care and creates unnecessary additional costs to providers and healthcare in general," concludes White.

High-Volume Genetic Testing Labs Affected Most

Among the labs that will be most affected by United's new genetic test prior authorization program are Genomic Health and Myriad Genetics and its subsidiary labs Crescendo Biosciences and Assurex Health. Other genetic testing labs that will have to contend with the policy include Ambry Genetic, Genoptix, Exact Sciences, Molecular Testing Labs, CardioDx, Genetic Technological Innovations, Companion Dx Reference Lab and Veracyte.

Top Genetic Testing Labs by Medicare Part B Allowed Revenue for 2015

Laboratory Name	*Location*	*Number of Medicare Beneficiaries Served*	*Total Medicare Allowed Amount*	*Avg. Allowed Amount Per Beneficiary*
Genomic Health	Redwood City, CA	17,852	$61,142,957	$3,425
Myriad Genetic Labs	Salt Lake City, UT	18,575	$48,098,558	$2,589
Ambry Genetics Corp.	Aliso Viejo, CA	8,909	$38,384,468	$4,309
Genoptix	Carlsbad, CA	17,403	$37,270,631	$2,142
Exact Sciences Labs	Madison, WI	58,432	$28,797,513	$493
Myriad/Crescendo Bioscience	S. San Francisco, CA	37,989	$27,005,189	$711
Myriad/Assurex Health	Mason, OH	11,443	$22,360,230	$1,954
Blackfly Investments (d/b/a Molecular Testing Labs)	Vancouver, WA	19,954	$18,544,361	$929
CardioDx, Inc.	Palo Alto, CA	15,793	$17,303,636	$1,096
Genetic Technological Innovations	Irvine, CA	17,177	$15,341,705	$893
Companion Dx Reference Lab	Honolulu, HI	16,483	$15,175,728	$921
Veracyte, Inc.	S. San Francisco, CA	12,997	$14,378,635	$1,106

Source: CMS Provider Payment Data for 2015

HOW LOW COULD MEDICARE RATES GO? (*cont'd from page 1*)

This is the third year that the Medi-Cal program has used private-payer data to adjust its lab test reimbursement rates. This year the process resulted in cuts to only four CPT codes and no increases. This suggests that Medi-Cal lab rates have now reached equilibrium with private-payer rates in California.

For the 2017 data collection period, 27% (124) of the required 465 labs submitted their private-payer data to the California Department of Health Care Services (CDHCS). The labs that submitted the requested data represent a majority of the total FFS claims for these services, according to Anthony Cava, spokesman for CDHCS.

There are some differences between how California's Medi-Cal program and the national Medicare program are using private-payer information to set rates. For example, the Medicare program is limiting rate cuts to a maximum of 10% per code per year for its first three years, beginning with the 2018 CLFS.

Comparison of Medi-Cal Lab Rates to Medicare National Rates

Code	Short Description	Medi-Cal Rates, 2017	Medicare Rates, 2017	Medi-Cal/ Medicare
80053	Comprehen metabolic panel	$9.28	$14.49	64%
80061	Lipid panel	11.54	18.37	63%
82306	Vitamin D	24.79	40.61	61%
83036	Glycosylated hemoglobin test	8.54	13.32	64%
83970	Parathormone	34.84	56.62	62%
84153	Total PSA	16.47	25.23	65%
84443	Thyroid stim hormone	14.76	23.05	64%
85025	Complete CBC w/auto diff WBC	6.75	10.66	63%
87624	HPV high-risk types	35.05	48.14	73%
88175	Cytopath c/v auto fluid redo	23.50	36.34	65%
82607	Vitamin B-12	13.33	20.68	64%
85610	Prothrombin time	3.49	5.39	65%
Average, routine tests				**64%**
81211	BRCA 1&2 seq & com	1,034.62	2,195.48	47%
81235	EGFR gene	180.00	331.82	54%
81275	KRAS gene	157.59	198.57	79%
81519	Oncology breast mRNA	2,732.80	3,443.36	79%
81528	Oncology colorectal screen	404.30	512.43	79%
81206	BCR/ABL1 gene	86.70	224.91	39%
Average, molecular & genetic tests				**63%**

Note: Medi-Cal clinical lab services are also subject to the AB 97 (Chapter 3, Statutes of 2011) 10% payment reduction, except when the lab services are provided in an outpatient hospital setting; under the Family Planning, Access, Care, and Treatment program; or when administered by the California Department of Public Health's Genetic Disease Screening Program.

Source: *Laboratory Economics* from California Dept. of Health Care Services and CMS

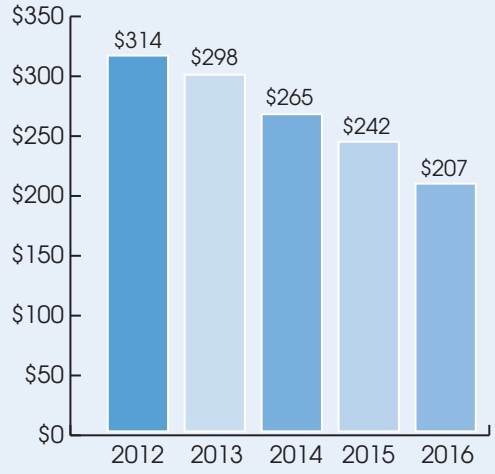
In addition, CDHCS only uses the reported private-payer rates that fall between zero and 80% of Medicare rates for each code. Rates exceeding this threshold are excluded from its rate-setting calculations because Medi-Cal does not have the authority to reimburse above 80% of Medicare rates.

Another big difference is that the Medi-Cal rate adjustments have included anatomic pathology codes, while Medicare's will not. That's good news for pathology labs and groups because the Medi-Cal program has set the global rate for the key pathology code CPT 88305 at just $40.99, including $32.79 for the professional fee and only $8.20 for the technical component.

The one area where pathology labs and groups are vulnerable is cervical cancer screening. Pap testing and DNA-based HPV tests are included in the Medicare CLFS and are subject to the private-payer rate repricing. Based on private-payer rates, the Medi-Cal program pays liquid-based Pap tests (CPT 88175) at 65% of Medicare rates and pays HPV high-risk tests (CPT 87624) at 73%.

In summary, Medi-Cal's private-payer rate adjustment results suggest that nearly all clinical lab CPT codes will reach Medicare's 10% reduction maximum in 2018. And ultimately Medicare rates could bottom out over the next 3-5 years at an average of roughly 65% to 70% of current rates, predicts *Laboratory Economics*.

Medi-Cal Lab Expenditures ($ millions)*



*Lab test expenditures are for Medi-Cal fee-for-service enrollees only.
Source: California DHCS

Big Savings for Medi-Cal

Meanwhile, Medi-Cal's transition to using private-payer lab rates has helped it slash its expenditures of lab testing to its roughly three million fee-for-service members from $314 million in fiscal year 2012 (ended June 30) to $207 million in fiscal year 2016. On a per member basis, lab test spending has decreased from an average of nearly $100 per Medi-Cal FFS enrollee in 2012 to about $67 per enrollee in 2016. By comparison, the Medicare program spent an average of $156 per beneficiary in 2016.

Top 10 Lab Companies Paid by Medi-Cal in 2015

Laboratory Provider	*Amount Reimbursed*
Quest Diagnostics/Unilab Corp.	$32,054,541
Genetic Disease Laboratory Branch (prenatal screening)	25,449,207
Planned Parenthood	22,732,840
LabCorp	7,295,333
Latara Enterprise (d/b/a Foundation Laboratory)	6,557,999
BioData Medical Labs	4,968,258
Whitefield Medical Lab	4,313,683
Alpha Clinical Lab Inc.	4,189,278
MTS Laboratory	4,115,008
American Clinical Reference	3,809,713
Total, top 10 labs	$115,485,860
Total, all Medi-Cal labs in 2015	$242,150,689

Source: California DHCS

Quest Diagnostics is by far the biggest Medi-Cal lab provider, having received $32 million of Medi-Cal payments in fiscal 2015 (the latest year of data available). This means that Quest's private-payer rates in California probably have the most weight each time CDHCS formulates its new Medi-Cal rates. It also means that Quest has suffered the most from resulting lab test rate cuts by Medi-Cal.

TOXICOLOGY LAB MARKETERS CHARGED WITH FRAUD

The U.S. Attorney's Office for the Northern District of Texas has charged four lab marketers for their role in an alleged $5 million fraud scheme involving unnecessary toxicology tests billed to the Tricare healthcare program for military members and their dependents.

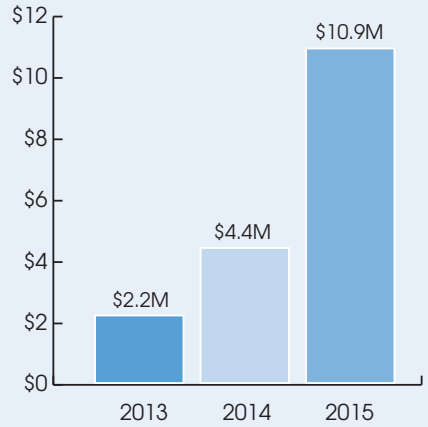
Two of the men charged, brothers Matthew Hawrylak, 41, and Britt Hawrylak, 38, have plead guilty and are scheduled to be sentenced in November. The other two, Erik Bugen, 42, and Jody Sheffield, 43, have each pleaded not guilty. Each defendant faces a maximum statutory penalty of five years in federal prison and a $250,000 fine.

Bugen was an owner of ADAR Group, a lab marketing firm based in Killeen, Texas, where the Fort Hood army base is located. The company's name is an acronym for Alcoholism & Drug Addiction Recovery. Sheffield was its operations manager, and the Hawrylak brothers were sales reps, according to the lawsuit.

Sometime in late 2014-early 2015, ADAR began performing marketing services for the lab management firm Progen Lab. Progen provides management services to Origen Laboratories. Origen Labs is the brand name for the clinical lab testing division at Cockerell Dermatopathology (Dallas). Progen, Origen and Cockerell Dermatopathology are all located in the same building in Dallas.

The lawsuit alleges that ADAR employees used Wal-Mart gift cards to entice Tricare beneficiaries to submit urine and saliva for unnecessary toxicology and DNA screening tests. The ADAR employees collected urine and saliva samples from as many as 200 beneficiaries per day. ADAR also paid physicians a "flat fee per month" to sign orders for the toxicology tests, according to the lawsuit.

Medicare Part B Payments to Cockerell Dermatopathology



Source: CMS Provider Payment Data, 2013-2015

Dr. Cockerell started Cockerell Dermatopathology in late 2012 after resigning from his position as Managing Director for Quest's Dermpath Diagnostics division. Cockerell Dermatopathology initially focused strictly on pathology services. It expanded into drugs-of-abuse testing (e.g., opiates, cocaine, PCP, et al.) in 2015 which helped its overall Medicare Part B revenue payments jump to nearly $11 million that year, according to data from CMS.

The samples were sent to Origen Labs/Cockerell Dermatopathology, which performed the testing and billed the Tricare program. Tricare paid Cockerell Dermatopathology approximately $4.8 million for the claims from May 2014 through as late as July 2017, the lawsuit said.

Progen paid the Hawrylaks for lab test referrals and they split the payments with Bugen and Sheffield, according to the lawsuit.

Michael Elliott, an attorney for Progen, told the *Dallas News* that Progen fired the four defendants last year after details of the alleged fraud came to light. "These four individuals were operating on their own accord and were terminated immediately," he said.

At this point in time, neither Progen, Cockerell Dermatopathology, or its owner Clay Cockerell, MD, has been charged with any crime. Cockerell Dermatopathology has said it is voluntarily refunding any revenue generated by the Tricare scheme (see *LE*, September 2016).

PUBLICLY-TRADED LABS GROW 3.6% IN FIRST-HALF 2017

On a combined basis, 18 publicly-traded labs saw their revenue increase by 3.6% to $9.4 billion during the first six months of 2017 (after adjusting for acquisitions), according to financial reports collected by *Laboratory Economics*.

Excluding Quest Diagnostics and LabCorp, 16 publicly-traded labs grew by 5.2% in first-half 2017 (after adjusting for acquisitions).

Pro forma revenue growth was fastest at Exact Sciences, up 194%, and Invitae Corp., up 137%. Other fast-growing lab companies included CareDx, up 37%; CombiMatrix, up 32%; and the drug-testing firm Psychemedics, up 22%.

Acquisition-adjusted revenue for Quest Diagnostics increased by 2.4% in first-half 2017, while LabCorp's revenue was up 3.9%. The third largest U.S. lab company, Bio-Reference Labs (now part of Opko Health) reported a 1.3% decline in revenue, while Sonic Healthcare USA grew by 3%.

Revenue Growth at 18 Publicly-Traded Lab Companies ($000)

Company	First-Half 2017	First-Half 2016	Reported Change	Pro Forma Change*
Quest Diagnostics (lab testing only)	$3,667,000	$3,565,000	2.9%	2.4%
LabCorp (lab testing only)	3,517,000	3,250,300	8.2	3.9
Opko/Bio-Reference Labs	511,956	518,534	-1.3	-1.3
Sonic Healthcare USA	441,500	420,500	5.0	3.0
Myriad Genetics	397,400	377,000	5.4	-5.0
Genomic Health	169,467	162,868	4.1	4.1
Aurora Diagnostics[1]	142,000	141,541	0.3	-3.5
Miraca Life Sciences[2]	134,690	129,005	4.4	4.4
NeoGenomics	127,767	122,832	4.0	4.0
Exact Sciences	106,009	36,020	194.3	194.3
Foundation Medicine	61,332	58,615	4.6	4.6
Enzo Clinical Labs (lab testing only)[3]	38,421	35,685	7.7	7.7
Veracyte	34,838	28,225	23.4	23.4
Invitae Corp.	24,674	9,536	158.7	137.0
CareDx	23,630	17,297	36.6	36.6
Psychemedics	19,893	16,367	21.5	21.5
Cancer Genetics Inc.	13,570	13,069	3.8	3.8
CombiMatrix	8,028	6,079	32.1	32.1
Total, 18 companies	$9,439,175	$8,908,473	6.0%	3.6%
Total, 16 companies (excluding Quest and LabCorp)	$2,255,175	$2,093,173	7.7%	5.2%

*Pro forma change is estimated by *Laboratory Economics* after adjustments for acquisitions.

[1]Aurora Diagnostics' revenue for the six months ended June 30, 2017 is estimated by *Laboratory Economics*.

[2]Miraca's revenue is for the six months ended March 31, 2017.

[3]Enzo's revenue is for lab services only for six months ended April 30, 2017.

Source: *Laboratory Economics* from company reports

USPSTF DRAFT GUIDELINES WOULD END PAP+HPV CO-TESTING

The independent U.S. Preventive Services Task Force (USPSTF) has issued draft guidelines that say the DNA test for high-risk strains of the human papillomavirus (HPV) can be used by itself once every five years for cervical cancer screening for women aged 30 to 65. Prior USPSTF guidelines issued in 2012 had called for the use of co-testing (Pap test plus HPV test) at a five-year interval for normal results.

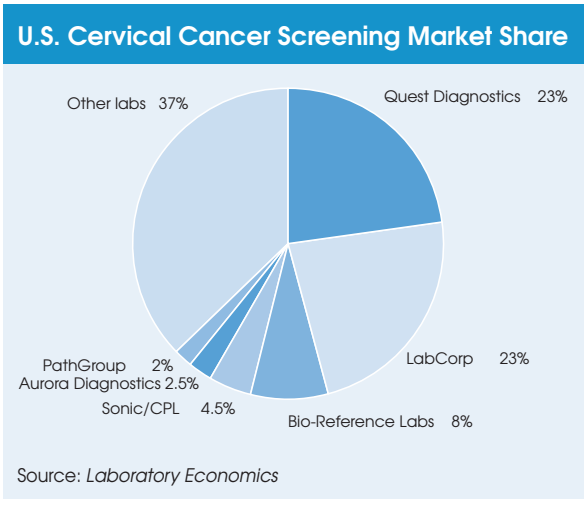
Women aged 30 to 65 also continue to have the option of a once every three-year Pap test. For younger women, aged 21 to 29, a Pap test once every three years is still the recommended screen, the panel said.

The USPSTF cited new studies showing that co-testing leads to more false alarms than either test alone, without adding benefit. The number of women dying from cervical cancer in the United States has stayed level at approximately 4,200 deaths per year since 2012.

The USPSTF is an independent, volunteer panel of experts in prevention and evidence-based medicine. Its guidelines influence payer coverage decisions. The draft recommendation is open for public comment on the task force's website until October 9, before the final version is published.

Hologic Inc. (Marlborough, MA), which generates some $300-$350 million in annual revenue from the sale of its ThinPrep liquid-based Pap test kits, says the USPSTF's new draft guidelines relied on studies conducted outside the United States, including some that employed outdated Pap testing methods. Further, Hologic says the USPSTF cited findings from a study that potentially unfairly skewed results in favor of HPV-alone testing. Hologic is urging USPSTF to reinstate its support of co-testing and to revise its recommendations to allow screening interval flexibility for physicians and their patients.

U.S. Cervical Cancer Screening Market Overview



The U.S. cervical cancer screening, which currently represents an estimated $2 billion of annual lab revenue from Pap and HPV testing, has been in decline since 2012 as a result of lengthening testing intervals. The new USPSTF draft guidelines, if finalized, will put additional pressure on this market.

Quest Diagnostics and LabCorp each have an estimated 23% share of the U.S. cervical cancer screening market, followed by Opko's Bio-Reference Lab with an 8% share. Sonic Healthcare USA has an estimated 4.5% share, Aurora Diagnostics, 2.5%, and PathGroup, 2%.

SPOTLIGHT INTERVIEW WITH DLO'S CEO DENNIS HOGLE

Dennis Hogle

Diagnostic Laboratory of Oklahoma (DLO) was formed in 2001 as a joint venture between Quest Diagnostics and INTEGRIS Health. The laboratory serves more than 3,500 physicians and 75 hospitals throughout Oklahoma. DLO employs more than 700 people, operates 41 patient service centers and performs more than 13 million tests per year. *Laboratory Economics* recently spoke with DLO's Chief Executive Dennis Hogle.

What areas do you serve? Do you operate outside Oklahoma?
As a joint venture between Quest Diagnostics (51% owner) and INTEGRIS Health (49%), Oklahoma's largest health system, DLO serves only the state of Oklahoma. Through the Quest partnership, DLO is able to offer the providers of Oklahoma the benefits of a regional lab, such as the ability to quickly adapt to the marketplace and provide local customer service and IT support 24/7, along with the features of a national lab such as a comprehensive test menu.

You became the CEO of DLO in April 2017. What are your strategic goals for the laboratory?
We are very focused on the challenge of providing health care in the more rural areas of Oklahoma, and are currently exploring potential partnerships.

Which areas of testing are growing the fastest?
Overall, we believe we're growing at the market rate, if not faster. Prescription drug monitoring is one of the fastest growing testing areas right now. Women's health is also growing.

Tell me about DLO's direct-access testing program.
DLO started our direct-access testing program, called DLO Direct, in January 2016. We started with a soft launch by promoting the program internally to our employees. In June 2016, DLO launched a new web design and began publicizing DLO Direct to the public. We are continually evaluating our limited test menu, which consists of more than 40 tests and panels, to determine if there is a need for expansion. Patient and provider response to this new service offering has been very positive.

What impact do you think the revised Medicare payment system for clinical laboratory tests, scheduled to take effect in January 2018, will have on your bottom line?
We're not sure what will happen. In Oklahoma, we're continuing to have reductions in Medicaid. This is challenging us to become more efficient and to grow without adding expenses.

What do you see as the greatest opportunities for DLO?
Our greatest opportunities are to provide access to critical diagnostic insights to rural areas of Oklahoma and to form relationships with tribal health systems. The tribes have their own health care systems, and we serve as a referral lab for testing they don't do. Our goal is to continue building on our success by bringing new tests to market and expanding the much-needed access points throughout rural Oklahoma.

What are your most significant challenges?
Our most significant challenge is to strike a balance between providing excellent levels of service and access points while battling decreasing reimbursement rates. We're looking for every opportunity to increase or improve efficiency throughout the operation while continuing to provide higher levels of quality and service.

LABCORP MAKES 3 NON-TRADITIONAL LAB ACQUISITIONS

LabCorp closed on its previously-announced (see *LE*, August 2017) acquisition of Chiltern (London, UK and Wilmington, NC) on September 1. Chiltern is a contract research organization (CRO) that provides clinical services for pharmaceutical and medical device companies. LabCorp paid $1.2 billion in cash, indicating a price equal to 2.2 times Chiltern's projected 2017 revenue of $550 million and 12.6 times its projected EBITDA of $95 million.

Separately, LabCorp's Covance Laboratories Inc. (Princeton, NJ) purchased the food testing business of ChromaDex Corp. (Irvine, CA) effective September 5. Covance paid ChromaDex $7.5 million plus a potential earnout payment of up to $1 million. The acquired food testing business has annual revenue of approximately $4.5 million per year and will be merged into Covance Food Solutions business. ChromaDex develops and commercializes proprietary ingredients used in dietary supplement, food, beverage, skin care and pharmaceutical products. Its divested food testing lab had been used for quality verification testing.

Finally, LabCorp's Dynacare (Brampton, Ontario, Canada) has acquired Hooper-Holmes Canada Ltd. (Toronto, Ontario, Canada) effective September 1. Privately-held Hooper-Holmes is one of Canada's largest independent paramedical service providers to the life insurance industry. Hooper-Holmes will become part of Dynacare Insurance Solutions, which provides lab testing and risk assessment services to life insurance companies.

NEOGENOMICS SELLS PATHLOGIC BACK TO FOUNDER

On August 1, NeoGenomics sold its equity interests in PathLogic (West Sacramento, CA) back to its original founder, Peter Kolbeck, MD. PathLogic is a full-service anatomic pathology lab with eight pathologists. NeoGenomics had originally acquired the technical lab at PathLogic for $6 million from the private equity firm Mainsail Partners in July 2014. Under that deal, the eight pathologists at Path Logic maintained ownership of their professional services corporation and signed a long-term contract to provide interpretations to NeoGenomics. But PathLogic recorded persistent revenue decreases and operating losses over the past few years, including an operating loss of $3.1 million on revenue of $7.3 million in 2016. NeoGenomics anticipates recording a loss on its sale of PathLogic of approximately $1.25 to $1.5 million in the third quarter of 2017.

GENESIS BIOTECHNOLOGY BUYS 4PATH

Genesis Biotechnology Group LLC. (Hamilton, NJ) has acquired the assets of 4Path Ltd. (Burr Ridge, IL), an anatomic pathology laboratory facility that employs three pathologists, including its Medical Director and President Stephen Ruby, MD. Financial terms were not disclosed. Genesis Biotechnology is a holding company (led by CEO Eli Mordechai, PhD) that also owns Medical Diagnostic Laboratories (Hamilton, NJ).

ROSETTA TO SELL PERSONALIZEDX TO PRAGMIN PROGNOSIS

Rosetta Genomics (Philadelphia and Rehovot, Israel) has agreed to sell its ownership of Cynogen, Inc. (d/b/a PersonalizeDx) to healthcare business group Pragmin Prognosis Inc. for $2.875 million in cash. PersonalizeDx operates a 30,000-square-foot CLIA-certified lab in Lake Forest, California. PersonalizeDx is currently performing testing for one clinical trial for Abbott Laboratories in bladder cancer. Rosetta acquired PersonalizeDx in early 2015 for $2 million in cash and 500,000 of its ordinary shares. Rosetta says it is now focused on commercializing its RosettaGX Reveal assay for classifying indeterminate thyroid nodules.

Laboratory Acquisition Summary, January 2016-September 2017 ($ millions)

Date	Buyer	Target	Purchase Price	Acquired Revenue	Price/ Revenue
Pending	Pragmin Prognosis	PersonalizeDx	$2.9	NA	NA
Pending	Invitae Corp.	CombiMatrix	33	16	2.1
Pending	Invitae Corp.	Good Start Genetics	40	22	1.8
Pending	Quest Diagnostics	Cape Cod Healthcare outreach lab	NA	NA	NA
Pending	Konica Minolta	Ambry Genetics	800	220	3.6
Sep-17	LabCorp	ChromaDex food testing lab	7.5	4.5	1.7
Sep-17	LabCorp's Dynacare	Hooper-Holmes Canada	NA	NA	NA
Sep-17	LabCorp	Chiltern	1,200	550	2.2
Aug-17	Peter Kolbeck, MD	Path Logic	NA	7	NA
Aug-17	Genesis Biotechnology	4Path Ltd.	NA	NA	NA
Jun-17	Premier Health	Quest's 33% stake in Compunet	NA	NA	NA
Jun-17	Poplar Healthcare	Genetics of Memphis	NA	NA	NA
May-17	Poplar Healthcare	Bostwick Laboratories	6.5	35	0.2
May-17	Aurora Diagnostics	Cleveland Skin Pathology Lab	NA	NA	NA
Jun-17	Quest Diagnostics	Med Fusion and Clear Point	150	NA	NA
May-17	LabCorp	PAML	NA	300	NA
May-17	Quest Diagnostics	PeaceHealth Labs	102	NA	NA
May-17	LabCorp	Mount Sinai outreach lab	NA	NA	NA
Apr-17	Aurora Diagnostics	Pathology Associates	4.5	NA	NA
Apr-17	CellNetix	Puget Sound Institute of Pathology	NA	NA	NA
Mar-17	Ampersand Capital	Genoptix	NA	NA	NA
Mar-17	Aurora Diagnostics	University Pathologists	11.4	NA	NA
Jan-17	Sonic Healthcare USA	West Pacific Medical Laboratory	NA	30	NA
Dec-16	DNA Diagnostics Center	Identigene	NA	NA	NA
Nov-16	P4 Diagnostix	Metamark Laboratories	NA	NA	NA
Oct-16	LabCorp	Center for Disease Detection	115	NA	NA
Oct-16	LabCorp	ClearPath Diagnostics	NA	NA	NA
Sep-16	LabCorp	Sequenom	379	115	3.3
Sep-16	Eurofins Scientific	VRL Laboratories	NA	NA	NA
Aug-16	Pritzker Group Private Capital	PathGroup	NA	250	NA
Aug-16	Schryver Medical	Professional Clinical Laboratory	NA	NA	NA
Aug-16	Internist Laboratory	West Pacific Medical Laboratory	NA	NA	NA
Jul-16	Oxford Immunotec	Imugen	22.2	NA	NA
Jun-16	Ningbo MedicalSystem	Atherotech	19.6	NA	NA
May-16	The Cooper Companies	Recombine Inc.	85.0	20	4.3
May-16	Advanced Dermatology	Skin Pathology Associates	NA	NA	NA
Apr-16	Aurora Diagnostics	Pathology Associates of Sebring	250K	NA	NA
Apr-16	LabCorp	Nebraska Lablinc	NA	NA	NA
Apr-16	LabCorp	Henry Newhall Mayo outreach labs	NA	NA	NA
Mar-16	Aurora Diagnostics	Pacific Pathology Associates	7	NA	NA
Feb-16	Quest Diagnostics	Clinical Laboratory Partners	135	NA	NA
Jan-16	Health Network Labs	Fairfax Identity/Mitotyping Tech.	NA	NA	NA
Jan-16	LabCorp	Pathology Inc.	NA	NA	NA
Jan-16	Consonance Capital Partners	Bako Integrated Physician Sol.	NA	NA	NA

Source: *Laboratory Economics*

LAB STOCKS UP 39% YTD

Eighteen lab stocks have risen by an unweighted average of 39% year to date through September 15. In comparison, the S&P 500 Index is up 12%. The top-performing lab stocks so far this year are Exact Sciences, up 220%; CombiMatrix, up 174%; and Cancer Genetics, up 133%. At the two largest public labs, LabCorp is up 20% and Quest Diagnostics is up 14%.

Company (ticker)	Stock Price 8/14/17	Stock Price 12/31/16	2017 Price Change	Market Capitalization ($ millions)	P/E Ratio	Price/ Sales	Price/ Book
Cancer Genetics Inc. (CGIX)	$3.15	$1.35	133%	$72	NA	2.6	3.4
CareDx (CDNA)	2.97	2.70	10%	67	NA	1.4	5.4
CombiMatrix (CBMX)	7.25	2.65	174%	21	NA	1.4	3.6
Enzo Biochem (ENZ)	10.86	6.94	56%	505	15.2	4.8	5.7
Exact Sciences (EXAS)	42.75	13.36	220%	5,090	NA	30.1	9.4
Foundation Medicine (FMI)	39.80	17.70	125%	1,430	NA	12.0	16.0
Genomic Health (GHDX)	31.27	29.39	6%	1,080	NA	3.2	6.4
Interpace Diagnostics (IDXG)	1.64	4.40	-63%	36	NA	2.6	0.9
Invitae (NVTA)	9.06	7.94	14%	442	NA	11.0	5.9
LabCorp (LH)	153.60	128.38	20%	15,640	21.5	1.6	2.7
Myriad Genetics (MYGN)	32.87	16.67	97%	2,250	59.6	2.9	2.9
NeoGenomics (NEO)	10.67	8.57	25%	847	NA	3.4	5.0
Opko Health (OPK)	5.97	9.30	-36%	3,340	NA	2.8	1.6
Psychemedics (PMD)	19.24	24.99	-23%	106	14.2	2.5	6.4
Quest Diagnostics (DGX)	104.96	91.90	14%	14,320	21.1	1.9	3.0
Rosetta Genomics (ROSG)	1.41	5.04	-72%	4	NA	0.5	0.6
Sonic Healthcare (SHL.AX)	21.14	21.40	-1%	8,880	20.7	1.7	2.3
Veracyte (VCYT)	7.99	7.74	3%	271	NA	3.8	5.7
Unweighted Averages			39%	$54,401	25.4	5.0	4.8

Source: Capital IQ

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