CareDx, Inc. (CDNA) — Overweight

Transforming Transplant Care; Initiating With Overweight & $13 Price Target

CONCLUSION

We are initiating coverage of CareDx with an Overweight rating and a $13 price target. CareDx's initial product is AlloMap, a non-invasive heart transplant monitoring alternative to invasive heart biopsies. CareDx has enjoyed initial success penetrating the ~$90M domestic heart monitoring market, but we view the expected FY16 launch into the ~$1B domestic kidney transplant monitoring market as the larger catalyst for the company. Initial kidney data is very encouraging, showing donor-derived cfDNA levels 3x higher in patients with biopsy confirmed kidney transplant rejection. We see sources of near-term upside to our estimates, with AlloMap penetration into the maintenance population, OUS launch and additional kidney data representing potential catalysts for CDNA shares.

- **AlloMap Progress Continues:** CareDx has shown steady progress penetrating the ~$90M domestic heart transplant opportunity, with 105 out of the 126 heart transplant centers in the U.S. currently using AlloMap. That said, AlloMap is only 49% and 18% penetrated into the first year and maintenance populations, respectively, leaving plenty of room for growth. Following CEO Peter Maag's 2012 arrival, AlloMap testing volumes increased 20.7% in FY13 and 25.5% in 1Q14. Our recent diligence at the World Transplant Congress showed CareDx is beginning to promote its expected cfDNA add-on test for heart transplant rejection and sales reps described initial strong interest in the product (3 centers already receiving RUO results).

- **Kidney Opportunity Large:** CareDx is preparing to enter the much larger domestic kidney transplant monitoring market (~$1B) in FY16, with a cfDNA-based (cell-free DNA) test. Initial data is very promising, with kidney transplant rejection patients showing a 3x increase in donor-derived cfDNA. We view additional kidney data publication as a potential catalyst for CDNA shares and anticipate the company to leverage this technology (longer-term) for the launch of additional organ transplant rejection assays (e.g. liver, lung).

- **Potential Upside Going Forward:** CareDx is currently in the process of launching its AlloMap test OUS, relying on Canadian and European partnerships to penetrate these markets. Our OUS revenue expectations are modest and we see better-than-expected penetration as potential upside to our forecast. Additionally, AlloMap penetration is relatively low in the maintenance population (~18%) and we view traction in this population as another source of potential upside. Separately, AlloMap has ~177M lives under coverage and favorable reimbursement decisions from additional payers could accelerate overall adoption and penetration rates.

RISKS TO ACHIEVEMENT OF PRICE TARGET

Risks for CareDx include weaker-than-expected AlloMap penetration, pipeline delays and competition.

COMPANY DESCRIPTION

CareDx develops novel tests for recipient organ transplant surveillance.

PRICE: US$10.02
TARGET: US$13.00

3.2x FY17E EV/Revenue discounted 25% to FY16E (FY17E Rev: $55.8M, FY16E: 12.5M shares outstanding, $1.22 in net cash/sh).

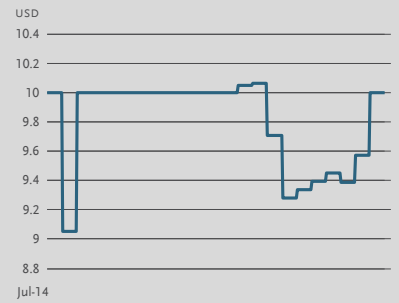
William R. Quirk, CFA
Sr Research Analyst, Piper Jaffray & Co.
612 303-6858, william.r.quirk@pjc.com

David C. Clair, CFA
Research Analyst, Piper Jaffray & Co.
612 303-6747, david.c.clair@pjc.com

Changes	Previous	Current
Rating		Overweight
Price Tgt		US$13.00
FY15E Rev (mil)	—	US$29.1
FY16E Rev (mil)	—	US$42.1
FY15E EPS	—	US$(0.50)
FY16E EPS	—	US$0.04

52-Week High / Low	US$10.20 / US$8.49
Shares Out (mil)	11.4
Market Cap. (mil)	US$114.2
Book Value/Share	US$5.31
Net Cash Per Share	US$5.87
Debt to Total Capital	0%
Yield	0.00%
Fiscal Year End	Dec

Price Performance - 1 Year



Source: Bloomberg

YEAR	REVENUE (US$ m)						EARNINGS PER SHARE (US$)					
	Mar	Jun	Sep	Dec	FY	FY RM	Mar	Jun	Sep	Dec	FY	FY P/E
2014E	5.9A	6.4	6.6	6.7	25.7	4.4x	(0.21)A	(0.15)	(0.12)	(0.12)	(0.60)	NM
2015E	6.8	7.1	7.4	7.8	29.1	3.9x	(0.13)	(0.15)	(0.12)	(0.10)	(0.50)	NM
2016E	8.4	10.0	11.2	12.5	42.1	2.7x	(0.09)	(0.01)	0.04	0.10	0.04	NM

Investment Thesis

We are initiating coverage of CareDx (CDNA) with an Overweight rating and $13 price target. Our Overweight rating is based on expectations for CareDx's ongoing penetration into the heart transplant rejection opportunity with its AlloMap test and an expected successful launch of its kidney rejection test in FY16. Our $13 price target is based on 3.2x FY17E EV/Revenue discounted at 25% to FY16, a 25% premium to its small-to-mid-cap diagnostic/specialty lab peer group. Given CareDx's anticipated entry into the much larger kidney transplant rejection opportunity in FY16, we believe discounting FY17 is the appropriate valuation metric.

CareDx's current product, AlloMap, serves as a non-invasive heart biopsy alternative. Heart biopsies are traditionally utilized as a heart transplant monitoring tool, with transplant recipients undergoing multiple biopsies to detect potential organ rejection. Heart biopsies are an uncomfortable, invasive procedure relying on insertion of a bioptome into the transplant recipient's jugular vein to collect ~5 heart tissue samples for analysis. AlloMap is a non-invasive, clinically validated 20-gene expression test enabling heart transplant rejection monitoring from a blood draw. We believe a premium multiple on CDNA's shares is warranted given our expectations for ongoing AlloMap adoption within the heart transplant community, continued traction with private payers as well as successful commercialization of its kidney transplant monitoring assay. CareDx's AlloMap assay is currently included in ISHLT guidelines and already has favorable coverage decisions in place with several large payers including Aetna, Cigna, Humana, Kaiser, WellPoint and Medicare (>177M covered lives) - although we would note payers representing ~220M covered lives are consistently paying for the assay (includes UnitedHealth). We anticipate ongoing adoption by the leading transplant centers and key opinion leaders as well as continued data publications will drive additional favorable coverage decisions going forward.

We anticipate CareDx's growth rate to materially accelerate with the anticipated FY16 (launching research use-only product in 2H15, commercial in early 2016) entry into the much larger kidney transplant monitoring market. As a comparison, CareDx's AlloMap for heart transplant rejection currently addresses a $90M U.S. market, but we estimate the U.S. kidney transplant opportunity is $1 billion or ~10x-11x larger. Importantly, we anticipate CareDx to leverage its existing sales force and transplant center relationships to successfully commercialize its kidney rejection assay, representing a highly leverageable opportunity. Initial data on CareDx's kidney assay is promising, showing cfDNA (cell free DNA) levels ~3x higher in patients with biopsy confirmed rejection events vs. no change in cfDNA levels in stable kidney transplant patients. We anticipate additional data in coming months leading up to the anticipated 2016 commercial launch.

We see sources of near-term upside to our published estimates with our forecast conservatively assuming a FY14 slowdown in AlloMap test growth. We note that in late 2012/early 2013, CareDx revised its marketing message with CEO Peter Maag (joined in October 2012) stressing AlloMap's capabilities to direct the use of immunosuppressive therapies in addition to the non-invasive nature of the test. This message has resonated well with the transplant centers, driving 20.7% test volume growth in FY13 and 25.5% in 1Q14. We view ongoing AlloMap adoption, especially in the under-penetrated maintenance population, as a source of potential near-term upside to our published estimates. We anticipate additional kidney transplant assay data in coming quarters, representing potential catalysts for CDNA share price appreciation as investors gain confidence in CareDx's ability to capitalize on the much larger kidney transplant monitoring opportunity. We also view the recent $5 million pre-IPO investment by Illumina as well as Dr. Steven Quake's (co-founder of Fluidigm, Verinata) involvement in the R&D pipeline as validations of CareDx's strong IP position and growth potential.

Exhibit 1

SCENARIO ANALYSIS

CareDx 2015 Revenue Scenarios			
High Case	**Low Case**	**2015 Estimates**	**First Year Heart Post-Transplant**
2.6K	2.6K	2.6K	New Heart Transplant Recipients
8	8	8	1st Year Post-Tx Test Frequency
20.7K	20.7K	20.7K	Market Opportunity (Tests)
43%	39%	41%	Market Penetration
9.0K	8.1K	8.6K	Tests Delivered
77%	77%	77%	Reimbursement
2.75K	2.75K	2.75K	ASP
19.0M	**17.3M**	**18.1M**	**1st Year Post-Tx Allomap Revenue**
High Case	**Low Case**	**2015 Estimates**	**2+ Years Heart Post-Transplant**
30.5K	20.5K	25.5K	Heart Transplant Survivors
3	3	3	2+ Years Post-Tx Test Frequency
91.5K	61.5K	76.5K	Market Opportunity (Tests)
7%	5%	6%	Penetration
6.5K	3.1K	4.7K	Tests Delivered
77%	77%	77%	Reimbursement
2.75K	2.75K	2.75K	ASP
13.8M	**6.6M**	**9.9M**	**2+ Years Post-Tx Allomap Revenue**
0.38K	0.18K	0.28K	International Allomap
0.40K	0.40K	0.40K	Backlog Revenue
33.5M	**24.5M**	**28.7M**	**Total Allomap Revenue**
High Case	**Low Case**	**2015 Estimates**	**First Year Kidney Post-Transplant**
17.4K	16.6K	17.0K	New Kidney Transplant Recipients
8	8	8	1st Year Post-Tx Test Frequency
138.9K	132.5K	135.7K	Market Opportunity (Tests)
1.5%	0.0%	0.5%	Market Penetration
2.0K	0.0K	0.6K	Tests Delivered
6%	6%	6%	Reimbursement
1.50K	1.50K	1.50K	ASP
0.18M	**0.00M**	**0.08M**	**1st Year Post-Tx cfDNA Revenue**
High Case	**Low Case**	**2015 Estimates**	**2+ Years Kidney Post-Transplant**
180.0K	180.0K	180.0K	Kidney Transplant Survivors
3	3	3	2+ Years Post-Tx Test Frequency
540.0K	540.0K	540.0K	Market Opportunity (Tests)
1%	0%	0%	Penetration
5.4K	0.0K	0.0K	Tests Delivered
6%	6%	6%	Reimbursement
1.50K	1.50K	1.50K	ASP
0.5M	**0.0M**	**0.0M**	**2+ Years Post-Tx cfDNA Revenue**
0.7M	**0.0M**	**0.1M**	**cfDNA Kidney Revenue**
0.4M	**0.4M**	**0.4M**	Collaborative Revenue/Royalty
34.6M	**24.8M**	**29.1M**	**Total Revenue**

CareDx 2016 Revenue Scenarios			
High Case	**Low Case**	**2016 Estimates**	**First Year Heart Post-Transplant**
2.6K	2.6K	2.6K	New Heart Transplant Recipients
8	8	8	1st Year Post-Tx Test Frequency
20.9K	20.9K	20.9K	Market Opportunity (Tests)
46%	42%	44%	Market Penetration
9.5K	8.7K	9.1K	Tests Delivered
77%	77%	77%	Reimbursement
2.75K	2.75K	2.75K	ASP
20.2M	**18.4M**	**19.3M**	**1st Year Post-Tx Allomap Revenue**
High Case	**Low Case**	**2016 Estimates**	**2+ Years Heart Post-Transplant**
30.8K	20.8K	25.8K	Heart Transplant Survivors
3	3	3	2+ Years Post-Tx Test Frequency
92.3K	62.3K	77.3K	Market Opportunity (Tests)
10%	8%	9%	Penetration
9.2K	5.0K	7.0K	Tests Delivered
77%	77%	77%	Reimbursement
2.75K	2.75K	2.75K	ASP
19.5M	**10.5M**	**14.7M**	**2+ Years Post-Tx Allomap Revenue**
1.08K	0.88K	0.98K	International Allomap
0.40K	0.40K	0.40K	Backlog Revenue
41.2M	**30.2M**	**35.4M**	**Total Allomap Revenue**
High Case	**Low Case**	**2016 Estimates**	**First Year Kidney Post-Transplant**
17.4K	16.6K	17.0K	New Kidney Transplant Recipients
8	8	8	1st Year Post-Tx Test Frequency
139.2K	132.8K	136.0K	Market Opportunity (Tests)
5.2%	0.0%	4.2%	Market Penetration
7.2K	0.0K	5.7K	Tests Delivered
30%	30%	30%	Reimbursement
1.50K	1.50K	1.50K	ASP
3.2M	**0.0M**	**2.8M**	**1st Year Post-Tx cfDNA Revenue**
High Case	**Low Case**	**2016 Estimates**	**2+ Years Kidney Post-Transplant**
180.0K	180.0K	180.0K	Kidney Transplant Survivors
3	3	3	2+ Years Post-Tx Test Frequency
540.0K	540.0K	540.0K	Market Opportunity (Tests)
2%	0%	1%	Penetration
12.3K	0.0K	6.9K	Tests Delivered
30%	30%	30%	Reimbursement
1.50K	1.50K	1.50K	ASP
5.4M	**0.0M**	**3.5M**	**2+ Years Post-Tx cfDNA Revenue**
8.6M	**0.0M**	**6.3M**	**cfDNA Kidney Revenue**
0.4M	**0.4M**	**0.4M**	Collaborative Revenue/Royalty
50.2M	**30.6M**	**42.1M**	**Total Revenue**

Source: Company reports, Piper Jaffray estimates

Valuation

Our $13 price target is based on 3.2x our FY17E EV/Revenue estimate discounted at 25% to FY16E (FY17E: $55.8 million in revenue, FY16E: 12.5 million shares outstanding, $1.22 in net cash/share), a 25% premium to CareDx's small-to-mid-cap diagnostic/specialty lab peer group. We believe a premium multiple is justified given the anticipated launch into the much larger kidney transplant monitoring market, the existing heart transplant opportunity, our expectations for additional AlloMap private payer coverage decisions as well as the potential near-term stock appreciation as additional data on its kidney transplant assay is released.

Exhibit 2

VALUATION

Company Name	Ticker	Price	Market Cap	Cash	Debt	Shares Out	EV	Consensus 2014E Rev	Consensus 2015E Rev	Consensus 2016E Rev	Revenue Growth 2-Year CAGR	Revenue Growth 3-Year CAGR	EV/Rev F2014E EV/Rev	EV/Rev F2015E EV/Rev	EV/Rev F2016E EV/Rev
CareDx	**CDNA**	**10.02**	**114.0**	**43.3**	**-**	**11.4**	**70.7**	**25.7**	**29.1**	**42.1**	**13%**	**28%**	**2.8**	**2.4**	**1.7**
Genomic Health	GHDX	26.15	819.4	105.7	-	31.3	713.7	306.2	342.8	362.7	12%	9%	2.3	2.1	2.0
Exact Sciences	EXAS	16.67	1,367.7	234.8	1.1	82.0	1,134.0	2.1	74.3	201.3	3438%	879%	540.0	15.3	5.6
Veracyte	VCYT	14.77	312.4	64.2	4.9	21.1	253.1	40.4	76.7	117.1	90%	70%	6.3	3.3	2.2
Myriad Genetics	MYGN	37.74	2,883.3	228.7	-	76.4	2,654.6	776.6	818.4	843.1	5%	4%	3.4	3.2	3.1
Foundation Medicine	FMI	24.15	669.8	110.3	1.1	27.7	560.5	58.0	108.6	190.6	87%	81%	9.7	5.2	2.9
Oxford Immunotec	OXFD	13.74	237.6	65.8	0.5	17.3	172.3	49.3	66.9	85.3	36%	31%	3.5	2.6	2.0
Median													4.9	3.3	2.6

Priced: Market Close 8/8/2014

2016 EV/Rev			
Median	2.6	**F2016:**	
Premium	25%	Cash	$15.3M
EV/Rev Multiple	3.2	Debt	$0.0M
FY17 Rev (disc @ 25%)	$44.6M	Net Cash	$15.3M
Price Target	**$13**	Shares Out	12.5M
Upside	25.8%		

Source: Thomson One, Company reports & Piper Jaffray estimates

Company Overview

CareDx's initial product, the AlloMap heart transplant molecular test, is a blood-based heart transplant monitoring alternative to the traditional invasive heart biopsy monitoring methods. AlloMap is a proprietary, 20-gene expression test used to detect heart transplant rejection in patients >55 days post-surgery. As background, heart transplant patients require monitoring following the procedure to detect early signs of transplant rejection so clinicians can alter immunosuppression therapy to avert full-blown organ transplant rejection. The historical gold standard for heart transplant monitoring is an invasive heart biopsy (endomyocardial biopsy), a procedure in which a bioptome is placed into an intravenous line inserted into the patient's jugular vein to take ~5 tissue samples for analysis. Heart biopsies have several shortcomings, including the subjective/qualitative nature of the analysis (tissues evaluated under microscope), potential to miss early stages of rejection, the risk of serious complications (e.g., arrhythmias, tricuspid valve injury, heart perforation), increased radiation exposure and patient discomfort. CareDx's AlloMap addresses these issues, offering a non-invasive (blood draw), quantitative (score of 0-40) evaluation of a patient's risk of transplant rejection. CareDx purchased privately-held ImmuMetrix on May 21, 2014, gaining significant intellectual property and additional expertise in the use of cell-free DNA (cfDNA) in transplant monitoring. CareDx plans to leverage its cfDNA expertise to launch an add-on test for AlloMap in 1H15, followed by a cfDNA-based kidney transplant monitoring assay in FY16 (RUO launch 2H15). We view the kidney transplant monitoring assay as a significant catalyst, opening up a much larger market for CareDx (US Market: $1 billion vs. $90 million for the heart transplant market) and view upcoming data publications as potential catalysts for CDNA shares as investors gain confidence in the company's ability to successfully launch and penetrate this larger opportunity.

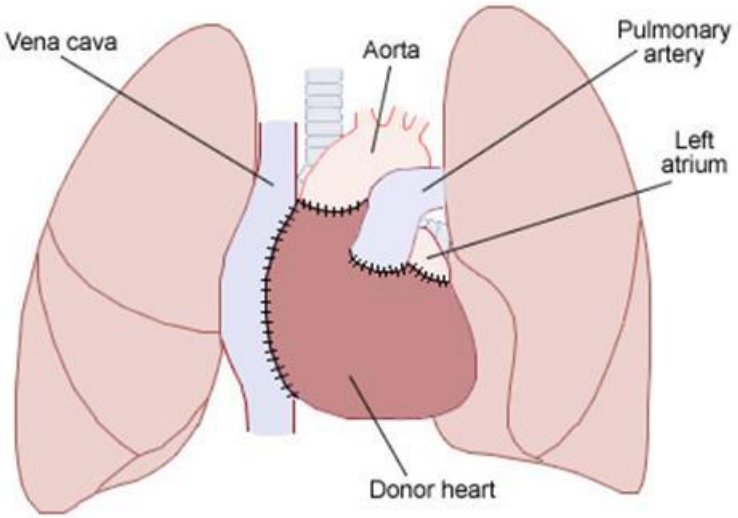
Following the 2005 launch of its AlloMap assay, CareDx has enjoyed steady test volume and revenue gains. Under the leadership of diagnostic veteran CEO Peter Maag, the company's growth trajectory has accelerated. CareDx has conducted and published multiple studies showcasing AlloMap's test performance and non-inferiority to heart biopsy, driving inclusion in the International Society for Heart and Lung Transplantation guidelines (ISHLT), favorable reimbursement decisions from payers representing >177 million covered lives as well as robust adoption in domestic heart transplant facilities (currently utilized in 105 out of 126 transplant centers). Going forward, we anticipate increased traction in the under-penetrated heart transplant maintenance market and kidney transplant markets will drive robust revenue growth.

Heart Transplant Background

Heart transplants are typically used in patients with end-stage heart failure, with coronary artery disease at the root of this condition in ~50% of these patients. In 2013, there were an estimated 2,500 heart transplant procedures performed and ~25,000 heart transplant recipients living in the U.S. Heart transplants are in high demand, but overall supply is limited, creating a rigorous recipient screening process. Patients undergo a lifestyle evaluation and candidates with an active infection, poor blood circulation, cancer or history of the disease, severe diabetes and those who smoke or abuse alcohol generally do not qualify as viable recipients. Additionally, potential heart transplant recipients must be a match with the donor heart. Matching a donor with a recipient typically involves a tissue typing test called HLA (human leukocyte antigen), testing for blood type compatibility and an evaluation of the patient's body size and medical condition. Hearts can only survive for 4-6 hours outside of the body, creating regional limitations for appropriate heart transplant recipients. Patients eligible for a heart transplant are placed on a waiting list run by the Organ Procurement and Transplantation Network (OPTN). Approximately 3,000 patients are on the heart transplant waiting list and wait times range from days to several months depending on the candidate's blood type and general condition.

Exhibit 3

HEART TRANSPLANT



Source: MedlinePlus

Post-Transplant Heart Biopsy

Historically, following a heart transplant, the transplanted organ is evaluated for rejection by a heart biopsy (endomyocardial biopsy). A heart biopsy is an invasive procedure, requiring the insertion of an intravenous line into the recipient's jugular vein, the passing of a bioptome through the jugular into the heart, followed by the collection of ~5 small tissue samples from the wall of the heart. Heart biopsies are invasive, carrying a 2% complication rate (arrhythmias, perforation of heart, tricuspid valve injury) and expose the patient to excessive radiation (x-ray guided procedure). Biopsies are conducted multiple times following implantation, with weekly biopsies during the first month, dropping to bi-monthly during month two, monthly in months 3-9, every other month in months 10-12 and then every 6 months for 2 years going forward, although frequency and duration of biopsy varies by transplant center. We note that given the multiple biopsies required, the cumulative complication rate is 25% over the duration of transplant. Following biopsy, tissue samples are sent to a pathologist for microscope evaluation to determine if there are

signs of cellular rejection. There are two different primary types of cellular rejection: the more common acute cell-mediate rejection (a T-lymphocyte-mediated response against the transplanted organ) or antibody-mediated rejection (AMR). Given that pathologist tissue examination is subjective, there is the additional risk that early stages of rejection could be missed. Overall, risk of rejection is highest in the initial months following transplantation and ~50% of heart transplant recipients experience varying degrees of rejection over the duration of the graft.

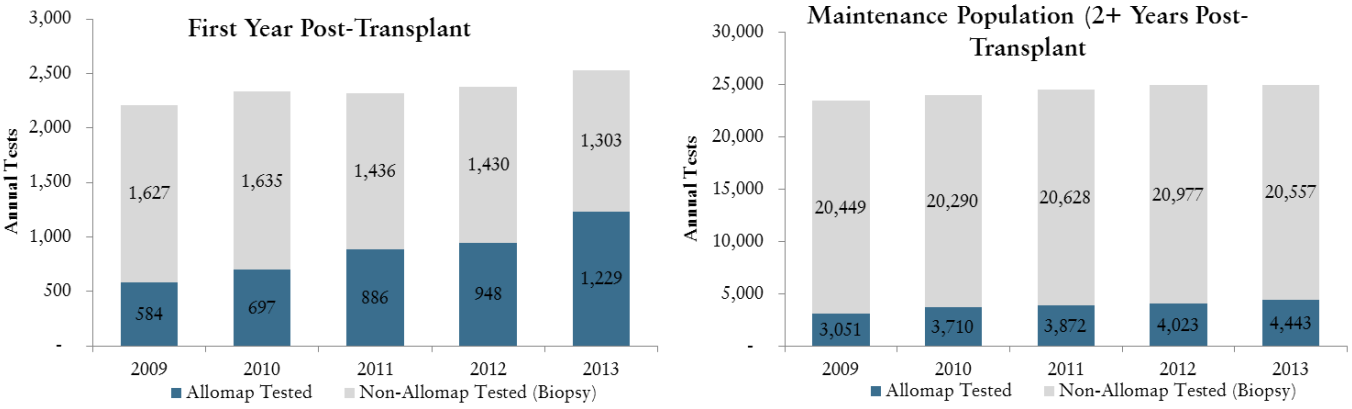
Patients begin a life-long regimen of immunosuppressive therapy to lower the risk of cellular rejection, although usage of these drugs introduces additional risks. Immunosuppressive therapies impact the body's ability to defend itself from infection, increase the risk of kidney failure and diabetes, potentially create lipid imbalances or lead to hypertension or osteoporosis. Interestingly, the use of immunosuppressive drug regimens in transplant recipients has also been linked to a 3-fold increased risk of developing cancer. Given these potentially fatal side effects, limiting the usage of immunosuppressive therapy is positive, with AlloMap allowing physicians to alter therapy in conjunction with indications of increasing or decreasing rejection risk.

AlloMap Improves Heart Transplant Monitoring Paradigm

In 2005, CareDx (formerly known as XDx) launched AlloMap as an alternative to heart biopsy in patients at least 55 days post-surgery. AlloMap is a 20-gene expression test (11 rejection biomarker genes, 9 control genes) taken from a simple blood draw, with physicians shipping blood to CareDx's CLIA lab in Brisbane, CA, typically receiving test results in 1-2 days. AlloMap addresses most of the heart biopsy issues identified above, providing a non-invasive, quantitative, lower-cost alternative. AlloMap test scores range from 0-40, with lower scores implying a more favorable rejection risk profile. CareDx conservatively pegs the U.S. heart transplant rejection market at $90 million, consisting of $35 million-$50 million in first year monitoring patients and $30 million-$60 million in the maintenance population. AlloMap is currently 47% penetrated into the first year heart transplant population, with 1,229 of the 2,532 heart transplant recipients in 2013 receiving AlloMap (to varying degrees) during the initial year following transplant, but just 18% penetrated into the larger maintenance market. Additionally, AlloMap's average reimbursed price is ~$2,750 (list: $3,600), favorable to heart biopsy reimbursement costs of $4,140 from private payers and $3,581 from Medicare. We note that including co-pays and other fees, we believe actual heart biopsy costs are higher than the reimbursement rates listed above. In our view, penetrating the maintenance population represents a significant U.S. AlloMap growth opportunity (only ~18% penetrated).

Exhibit 4

ALLOMAP U.S. HEART TRANSPLANT PENETRATION



Source: Company reports & Piper Jaffray estimates

CareDx has generated compelling clinical data to support its AlloMap assay compared to invasive heart biopsies. The 2004 publication of CareDx's CARGO study (Cardiac Allograft Rejection Gene Expression Observational) showed AlloMap's ability to detect a low probability of rejection with a very strong negative predictive value (NPV) of 99.6%. CareDx leveraged the CARGO data to gain FDA approval in 3Q08, followed by addition to ISHLT guidelines in 2010. An independent validation of AlloMap (CARGO II) further validated CareDx's initial data, showing a 98.4% NPV. Additionally, IMAGE, a prospective, randomized trial (*NEJM 2010*) showed non-inferiority of AlloMap vs. biopsy in routine monitoring (N=602, p=0.86, hazard ratio = 1.04) in patients >6-months-5 years post transplantation. eIMAGE expands the time interval for AlloMap vs. IMAGE, showing similar outcomes for AlloMap vs. biopsy for the >55-day-5 years post-transplant time frame. All in, we believe AlloMap has amassed compelling clinical data, with published studies including over 2,000 patients showing strong NPV and no statistical performance difference compared to biopsy. We anticipate AlloMap's strong data suite to continue to drive favorable private payer reimbursement decisions and ongoing penetration of the first-year and maintenance heart transplant opportunities.

Exhibit 5

ALLOMAP CLINICAL DATA PUBLICATIONS

Year	Author	Title	Conclusion	Patients
2004	Crespo-Leiro, et al.	Cardiac Transplanted Organ Rejection Gene expression Observational (CARGO)	Demonstrated AlloMap's ability to detect a low probability of acute cellular rejection in cardiac transplanted organ recipients (Am. J. of Transplantation, 2012)	N = 629
2010	Pham MX, et al.	Invasive Monitoring Attenuation through Gene Expression (IMAGE)	Multicenter randomized controlled trial of surveillance with AlloMap vs. biopsies, showing patient outcomes receiving AlloMap surveillance were non-inferior to biopsy. (N. Eng. J. Med., 2010)	N = 602
2011	Crespo-Leiro, et al.	CARGO II	Independent confirmation of AlloMap performance in classifying acute cellular rejection. Long-term outcomes predicted by AlloMap variability. (Am. J. Transplantation, 2012).	N = 741
2013	Kobahigawa, et al.	Early Invasive Monitoring Attenuation through Gene Expression (EIMAGE)	Randomized controlled trial of rejection surveillance strategies (≥ 55 days post-transplantation), showing clinical outcomes for patients managed with AlloMap were non-inferior to biopsy surveillance. (J. Heart and Lung Transplantation, 2013)	N = 60
2013	Not Avaliable (Study Still Ongoing)	Outcomes AlloMap Registry (OAR)	Multi-year, multi-center registry to prospectively observe the long-term clinical management and outcomes of heart transplant recipients with regular AlloMap testing.	N = ~200

Source: Company reports & Piper Jaffray estimates

Additionally, we believe AlloMap represents a means to tailor immunosuppressive therapy. As a reminder, usage of immunosuppressive drugs creates the potential for multiple adverse side-effects, including infection, increased risk of kidney failure and diabetes, lipid imbalances, hypertension or osteoporosis. Given the limitations of biopsies (subjective, uncertain for early-stage heart transplant rejection), this information is not typically utilized to tailor a patients immunotherapy regimen with transplant centers frequently taking a "one size fits all" approach. We believe the quantitative information provided by AlloMap enables physicians to identify patients with lower rejection risk (Allomap variability score of <0.5 has a lower risk for future rejection (NPV: 98.3%), ISHLT 2014), creating the opportunity to personalize immunosuppressive therapy in concordance with individual rejection risk. Separately, evidence suggests tracking AlloMap scores over time is an indicator of increasing/decreasing rejection risk, with rising scores indicative of higher rejection risk and decreasing/stable scores implying a favorable rejection profile (ISHLT 2014).

cfDNA Opens New Markets

CareDx's pipeline includes the planned introduction of solid organ cfDNA (cell-free DNA) transplant rejection tests. As background, cfDNA are short DNA fragments released into the blood stream when a cell dies. The initial application of this concept is the measurement/analysis of cell-free fetal DNA (cffDNA) in pregnant women, with diagnostic methods (shotgun sequencing, SNP sequencing) currently capable of analyzing fetal DNA in maternal plasma to detect chromosomal abnormalities (e.g., Down syndrome (trisomy 21), Edwards syndrome (trisomy 18), Patau syndrome (trisomy 13)) as well as several microdeletion associated disorders. CareDx plans to use genetic differences to identify donor vs. recipient cfDNA in the bloodstream, with the measurement of the level and

changes in donor-derived cfDNA providing information on organ rejection. Given both acute cellular rejection and chronic rejection involve cell death, cfDNA is a logical transplant surveillance target, in our opinion. We uncovered seven published studies to date highlighting cfDNA as a marker of organ rejection, with the research focusing primarily on cfDNA utility for heart and kidney transplant rejection. CareDx's initial plans include launching a cfDNA-based add-on test for its AlloMap assay for heart rejection (expected 2H14), followed by a cfDNA-based kidney rejection assay (launch as RUO in 2H15, full commercial launch 2016). CareDx will offer its cfDNA heart transplant assay as a no-cost (i.e. no revenue) add-on to its existing AlloMap test, with this strategy anticipated to drive acceptance of cfDNA capabilities in transplant rejection, paving the way for a successful kidney launch. We anticipate additional CareDx data on the use of cfDNA as a marker of kidney transplant rejection at ISHLT 2015 (April 15-18, 2015). Overall, we view initial data utilizing cfDNA as a marker of organ rejection as very promising and anticipate successful commercialization of cfDNA for heart as well as kidney transplant rejection and believe this technology forms the backbone for future solid organ transplant rejection assays (e.g., liver, lung).

Exhibit 6

CELL-FREE DNA IN TRANSPLANT REJECTION PUBLICATIONS

Year	Author	Topic	Title	Conclusion
2009	Moreira, et al.	Kidney	Cell-free DNA as a Noninvasive Acute Rejection Marker in Renal Transplantation	Cut-off plasma tCF-DNA concentration of 12,000 genome equivalents/mL correctly classified AR and non-AR episodes in 86% of transplantations (89% sensitivity/85% specificity)
2011	Snyder, et al.	Heart	Universal Noninvasive Detection of Solid Organ Transplant Rejection	80% sensitivity/85% specificity for heart rejection
2013	Sigdel, et al.	Kidney	A Rapid Noninvasive Assay for the Detection of Renal Transplant Injury	Serial monitoring of donor-derived cfDNA can be a surrogate biomarker of acute injury in the donor organ but lacks the specificity to distinguish between AR and BK virus nephropathy (AUC=.80 ($p<0.0006$))
2013	Beck, et al.	Kidney, Heart and Liver	Digital Droplet PCR for Rapid Quantification of Donor DNA in the Circulation of Transplant Recipients as a Potential Universal Biomarker of Graft Injury	A novel, cost-effective, rapid technique to quantify cfDNA from grafts in transplant recipients represents a promising technique, study evaluates cfDNA for kidney, heart and liver rejection events
2014	Romanov, et al.	Kidney	A Noninvasive Assay for Monitoring Renal Allograft Status	Demonstrates cfDNA as a predictor of future kidney transplant rejection
2014	Kobasigawa, et al.	Heart	Increased Plasma Levels of Graft-derived Cell-free DNA Correlate with Rejection in Heart Transplant Recipients	ISHLT poster, cfDNA 5-10x higher in cardiac rejection
2014	De Vlaminck, et al.	Heart	Circulating Cell-free DNA Enables Noninvasive Diagnosis of Heart Transplant Rejection	cfDNA sensitivity and specificity comparable to biopsy (AUC=0.83)

Source: Company reports & Piper Jaffray estimates

ImmuMetrix Acquisition Strengthens cfDNA Position

In addition to CareDx's internal cfDNA expertise, the company recently acquired privately-held ImmuMetrix. Founded by life science entrepreneur Dr. Stephen Quake, ImmuMetrix has significant cfDNA intellectual property and know-how. The ImmuMetrix acquisition includes an exclusive license to a patent from Stanford University for the diagnosis of organ transplant rejection recipients using cfDNA. Terms of the ImmuMetrix acquisition included $600,000 in cash, 12% of CareDx's equity and a 3% equity milestone, with the equity components based on CareDx's capital structure on 4/14/14. The equity milestone will be paid to former ImmuMetrix shareholders contingent on the commercialization of 2,500 commercial tests utilizing cfDNA in organ transplant recipients within six years of acquisition close (i.e. by 6/2020). Importantly, Dr. Quake will be a board observer and will serve as a consultant for CareDx's pipeline development. Judging from Dr. Quake's

successful innovation track record (co-founded Fluidigm and Verinata), we favorably view his ongoing involvement in CareDx's R&D and board functions.

Kidney Transplant Key Growth Catalyst

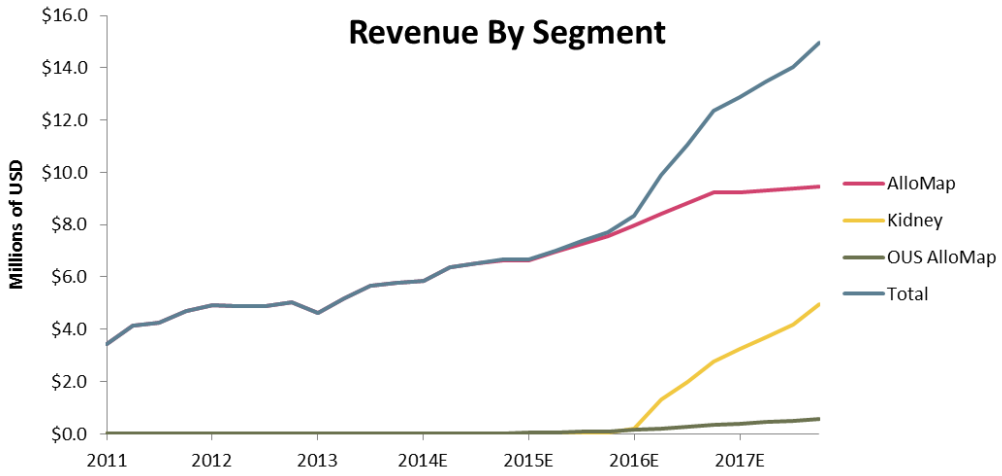
CareDx's pipeline includes the launch of a cfDNA-based assay to detect kidney transplant rejection. Kidney biopsy is not commonly used as a transplant monitoring tool, with a high complication rate (~13%), highly invasive nature and patient discomfort making this a feasible tool only when organ rejection is suspected (and/or immediately post-graft). Currently, kidney transplants are commonly monitored by measuring serum creatinine, with an initial base-line measurement established post-transplant and deviations from this level used to alert clinicians of potential issues with the transplanted organ. Serum creatinine is solely processed by the kidney(s) and rising levels are a signal of impaired kidney function. Utilizing serum creatinine as a tool for kidney transplant rejection monitoring is fraught with issues, with serum creatinine not specific to kidney transplant rejection and a poor predictor of early histopathologic changes (i.e. organ already damaged when serum creatinine signals something is awry). This lack of specificity and inability to detect early signs of kidney transplant rejection create the need for a better diagnostic tool, opening the door for CareDx to capture significant share in this greenfield opportunity. Each kidney transplant failure translates into an average annual cost increase of $54,000 when a recipient returns to hemodialysis therapy, creating additional incentive for an assay capable of early detection enabling intervention to save the transplant. The U.S. Renal Data System (USRDS) estimates 5,600 kidney transplant recipients returned to dialysis therapy in 2012.

CareDx will leverage the cfDNA expertise it gains through the development and commercialization of its heart transplant cfDNA assay to successfully develop and commercialize its cfDNA kidney transplant rejection test. Importantly, CareDx has over 1,000 banked samples from 101 subjects collected during 325 visits, including blood, plasma and urine. These samples were collected during CareDx's Kidney Transplanted Organ Rejection Gene expression Observational Study or KARGO. CareDx is utilizing its KARGO sample library for its kidney cfDNA biomarker research, with expectations to initiate a prospective clinical outcomes study in kidney transplant patients in 2H15.

Patients with end-stage kidney disease are the traditional candidates for kidney transplantation and only one kidney is necessary to restore the function of an individual's previous kidneys. There are an estimated 16,900 U.S. kidney transplantations per year and ~180,000 living recipients, creating a significantly larger total addressable market. Assuming a $1,500 ASP, we estimate the U.S. kidney transplant market is $1 billion, split into a $210 million first-year testing opportunity and $810 million in annual maintenance (years 2-10), with the kidney transplant market representing a significantly larger domestic opportunity for CareDx compared to its legacy heart transplant market ($90 million-$265 million). We are modeling a significant top-line acceleration following CareDx's kidney transplant rejection assay, forecasting a minimal contribution expected in 2015, followed by $6.3 million in 2016 and $16.1 million in 2017 (full commercial launch in 2016). We believe CareDx's kidney transplant rejection business could potentially rival/surpass its legacy AlloMap business in the 2018-2019 time frame.

Exhibit 7

KIDNEY TRANSPLANT REJECTION REPRESENTS SIGNIFICANT GROWTH CATALYST



Source: Company reports & Piper Jaffray estimates

Reimbursement

CareDx has leveraged its clinical and analytical validation studies, patient comfort and economic value proposition into multiple coverage decisions for its AlloMap test. Specifically, CareDx has coverage decisions in place with several large private payers including Aetna, Cigna, Humana, Kaiser, WellPoint as well as reimbursement in place with Medicare, translating into greater than 177 million lives under coverage for its AlloMap assay. Medicare currently represents the largest percentage of AlloMap volume (~39%) and revenue (~52%). CareDx does not have a formal coverage decision in place with a few notable private payers (e.g., UnitedHealth), although payers representing >220 million covered lives (including UnitedHealth) regularly reimburse for AlloMap. As of March 31, 2014, CareDx had been reimbursed for 78% of all AlloMap test results delivered in the trailing 12-month period prior to September 30, 2013. We anticipate the trailing 12-month percentage reimbursed to improve as CareDx gains additional AlloMap coverage decisions, although the kidney launch could initially weigh on this metric given our expectations for minimal coverage upon assay launch.

Given the building body of clinical data, inclusion in ISHLT guidelines, FDA approval and our expectations for ongoing favorable data publication (particularly following cfDNA launch), we anticipate continued progress obtaining favorable AlloMap private payer coverage decisions. Additionally, we believe CareDx's traction with both private payers and Medicare will benefit the company as it seeks initial reimbursement coverage for its kidney transplant rejection assay.

Exhibit 8

ALLOMAP COVERAGE DECISIONS

ID	Managed Care Entity	Membership Est. (mm's)	Covered	Not Covered	NA	Effective Date	Comments
1	Medicare/Medicaid	49.3	X			Feb-12	Meet Medicare reasonable and necessary criteria.
2	United	33.8		X			Medical policy unavailable for review.
3	WellPoint	31.1	X			Jul-13	Medically necessary in heart transplant recipients between 1 and 5 years post transplant.
4	Aetna	19.6	X			Nov-13	AlloMap considered medically necessary for monitoring rejection in heart transplant recipients more than 1 year post heart transplant
5	Cigna	13.7	X			Feb-14	Considered medically necessary 6 months-5 years following transplant when several criteria are met.
6	HCSC	10.1		X		Jul-13	Considered experimental, investigational and unproven
7	Kaiser Permanente	7.1	X				Medical policy unavailable for review.
8	Humana	6.8	X			Jan-14	Members eligible for AlloMap for heart transplant recipients who are between 1 and 5 years post transplant.
9	Independence BC	5.7	X			Jul-11	AlloMap is medically necessay when the individual is at least 6 months post-heart transplant.
10	BCBS of Michigan	4.4		X		Sep-13	Considered experimental / investigational
11	Highmark	4.1	X			Mar-14	Considered medically necessary to rule out acute heart rejection (grade 2 or greater) in appropriate low-risk patients between 6 months and 5 years post-transplant.
12	Highmark	4.0					
13	Florida Blue	3.3		X		Jun-14	Considered experimental / investigational
14	BCBS of North Carolina	2.9		X		Apr-14	Considered investigational
15	Horizon BCBS of NJ	2.8		X		May-14	Considered investigational
16	EmblemHealth	2.6	X			Dec-13	Members eligible for AlloMap testing (every 1-3 months) to rule-out moderate-severe ACR (grade ≥2R) when certain criteria are met.
17	CareFirst	2.6	X			Feb-14	Medically necessary for patients between 6 months and 5 years post transplant who are determined to be at low risk for organ rejection.
18	BCBS of Tennessee	2.3		X		Jun-14	Considered investigational
19	BCBS of Alabama	2.3		X		Apr-14	Considered investigational
20	BS of California	2.3	X			Jul-11	Medically necessary for monitoring heart transplant rejection more than one year post-transplant.
21	BCBS of Massachusetts	2.1		X		Jun-14	
22	BCBS of Minnesota	2.0			X		
23	Molina Healthcare	2.0			X		
24	Regence	1.9		X		Jun-13	Considered investigational
25	Premera	1.4			X		
26	Wellmark BCBS	1.4			X		
27	Excellus BCBS	1.4			X		
28	BCBS of South Carolina	1.3		X		Jan-14	Considered investigational
29	WellCare	1.2		X		Nov-13	Considered experimental and investigational
30	Medical Mutual of Ohio	1.2	X			Oct-11	Medically necessary for heart transplant recipients between one and five years post-transplant when endomyocardial biopsy is not planned.
31	Health Net	1.2	X			May-14	Members eligible for AlloMap testing (every 1-3 months) to rule-out moderate-severe ACR (grade ≥2R) when certain criteria are met.
32	Medica	1.1			X		
33	BCBS of Arizona	1.0		X		May-14	Considered experimental / investigational
34	BCBS of Louisiana	1.0		X		May-14	Considered investigational
35	Harvard Pilgrim	0.9			X		Unable to find policy
36	BCBS of Mississippi	0.8		X		Jun-14	Considered investigational
37	Arkansas BCBS	0.8			X		Unable to find policy
38	BCBS of Kansas City	0.8		X		Oct-13	Considered investigational
39	Capital BC	0.8	X			May-13	Medically necessary for heart transplant recipients between one and five years post-transplant.
40	Tufts Health Plan	0.8			X		Unable to find policy
41	BCBS of Kansas	0.7		X		Oct-13	Considered experimental / investigational
42	HMSA (BCBS of Hawaii)	0.6			X		Medical policy unavailable for review
43	BC of Idaho	0.5		X		Apr-13	Considered investigational
44	BCBS of Nebraska	0.5			X		Unable to find policy
45	BCBS of Oklahoma	0.5			X		Unable to find policy
46	Group Health Cooperative	0.5	X			Mar-14	Covered for heart transplant patients who can no longer undergo biopsy for the detection of allograft rejection.
47	BCBS of Rhode Island	0.5		X		Sep-10	Considered not medically necessary due to lack of peer-reviewed medical literature to support test efficacy.
48	BCBS of Western NY	0.5		X		May-14	Considered investigational
49	BC of NE Pennsylvania	0.4		X		Jul-14	Considered investigational
50	Centene	0.4			X		Policy unavailable for review
51	BCBS of North Dakota	0.4			X		Policy unavailable for review
52	BCBS of Montana	0.2		X		Jul-13	Considered experimental, investigational and unproven.
53	WPS	0.2			X		Unable to find policy
54	BS of NE NY	0.1		X		Jul-14	Considered investigational
55	BCBS of Vermont	0.1	X			Jul-13	Medically necessary as a non-invasive method of determining the risk of rejection in heart transplant recipients between 1 and 5 years post-transplant.
56	BCBS of Wyoming	0.1			X		Unable to find policy

Source: Medical policy guidelines sourced from managed care websites and Piper Jaffray estimates
Source: Membership information sourced from managed care websites, SEC filings and Piper Jaffray estimates
Note: Excluding Palmetto, membership estimates have been adjusted based on Piper Jaffray estimates to exclude Medicare, MA and PDP enrollment figures wherever possible

World Transplant Congress Takeaways

We recently attended the World Transplant Congress (WTC, July 26-31, 2014) and gained unique insight into CareDx's cfDNA innovations as well as potential competitors. As background, WTC is an annual joint meeting between the American Society of Transplant Surgeons (ASTS), The Transplant Society (TTS), and the American Society of Transplantation (AST). The conference is largely focused on kidney and liver transplantation, although several lung and heart abstracts were also presented. CareDx presented data on their in-house cfDNA work (as opposed to ImmuMetrix IP). The data presented correlated graft-derived cfDNA to biopsy-confirmed rejection in heart and kidney patients. Specifically, 118 samples (76 patients) from the previously performed CARGO and CARGO II studies and 72 samples (38 patients) from a new cohort of kidney patients were subjected to cfDNA quantification. To separate graft-derived cfDNA from host-derived cfDNA, the study only used patients who received a gender-opposite transplant (e.g., male heart in a female patient) and then used the male-specific TSPY1 gene as the individualizing marker. The levels of graft-derived cfDNA were then correlated with the samples. The results were statistically significant ($P<0.05$), with a median increase in graft-derived cfDNA between biopsy-confirmed rejection and stable patients of 10x and 5x for CARGO and CARGO II samples, respectively, and 3x for kidney samples. The researchers of the study noted this was only the first inning, as CareDx plans to sequence and correlate all samples (8,217) from both CARGO (4,917 total samples) and CARGO II (>3,300 total samples) studies, while acquiring additional kidney samples. Furthermore, future studies will no longer require gender-mismatched patients and allografts, identifying single-nucleotide polymorphisms (SNPs) to create a graft and host fingerprint, which will be used to single out specific cfDNA. While the sample size is relatively small, the results are strong, with graft-derived cfDNA clearly increasing as graft cells deteriorate during rejection episodes.

During the conference, we visited the CareDx booth where the Allomap test continues to be touted as a better approach to biopsies. Allomap data was not presented during the conference, although given the close proximity to the International Society of Health & Lung Transplantation annual meeting (April 2014) this was in-line with our expectations. Additionally, cfDNA signage has been added to their displays, with the WTC conference representing the first time cfDNA was advertised by the company. Sales personnel described strong interest in using cfDNA for rejection detection, with three centers already receiving research use only (RUO) results from cfDNA heart.

CareDx was not the only company presenting data on cfDNA at WTC. Chronix Biomedical was also in attendance, with two posters describing the use of graft-derived cfDNA for immunosuppressive management and detection of rejection episodes in liver patients. The sample size was small, only 18 patients, but the results were statistically significant. Chronix plans to offer a 510(k) test sold directly to hospital labs, with a cost of ~$200, not including instrumentation, lab staff, and training. Next steps for Chronix includes a study of ~100 heart and ~100 kidney patients, with results expected late 2014, 1H15.

Pipeline Opportunities

CareDx has an active R&D program, continuously working to improve and prepare clinical studies for its AlloMap assay and evaluate additional new product opportunities in its core transplant surveillance business. CareDx has a sample repository and a proprietary database to further its R&D efforts, including data from more than 2,000 heart transplant (>37,000 samples) and 101 kidney transplant recipients (>1,000 samples). Going forward, we believe CareDx's R&D initiatives will likely focus on leveraging cfDNA to develop new organ transplant surveillance assays. We would note, initial studies (Snydev, et al., Hidestrand, et al.) suggest cfDNA is potentially a universal rejection marker, applicable in heart, kidney, liver and lung transplant surveillance. Longer-term, we anticipate CareDx to

develop and commercialize additional transplant surveillance products, with liver and lung representing the most likely candidates, in our opinion. There are ~4,300 annual liver transplants and 60,000 living domestic recipients, suggesting a ~$210 million addressable market, while lung is slightly smaller, with ~1,800 domestic transplants annually and 10,000 living recipients (~$45 million market). That said, given the large untapped market opportunity, we expect the company to primarily focus its near-term R&D and intermediate-term commercial efforts to launch its kidney surveillance test.

Sales & Marketing

There are only 126 heart transplant centers in the United States, creating an easily addressable end market and the need for a very small domestic sales force. All in, CareDx currently has a team of 5 direct transplant account managers, reporting to 1 sales director. We anticipate a modest sales rep build, with our model estimating 9 direct reps in 2017. Conveying AlloMap's value proposition requires a highly technical selling process, with reps focusing on educating the transplant team within a given center. Encouragingly, there is a high degree of overlap between heart and kidney transplant centers (and other solid organs) creating a highly leverageable sales force.

CareDx is in the process of launching its AlloMap assay OUS, partnering with specialty diagnostic company DiaxonHit to initially penetrate the European market. DiaxonHit represents an ideal partner for the European build-out, in our opinion, with the company having deep experience in transplantation. DiaxonHit will open an AlloMap dedicated lab in 4Q14 and has committed one dedicated sales rep to the initial rollout. Under the arrangement, CareDx receives a mid-to-high teens royalty on all DiaxonHit AlloMap sales. CareDx is also in the process of launching AlloMap in Canada, relying on partner LifeLabs Medical Lab Services to penetrate the Canadian market. CareDx will process all Canadian AlloMap tests and will be paid per test by LifeLabs, while LifeLabs will handle all of the Canadian collection responsibility. The Canadian arrangement shifts all of the related reimbursement risk to LifeLabs.

Management

We view management's diagnostics background as a solid foundation for continued penetration of the heart transplant market and successful commercialization of its pipeline kidney surveillance assay (and future solid organ products). We are particularly impressed with CEO Peter Maag's reacceleration of AlloMap growth since joining the company at the end of 2012.

Peter Maag, Ph.D., Chief Executive Officer: Peter Maag has served as President and Chief Executive Officer of CareDx since October 2012. Previously, Dr. Maag held positions of increasing responsibility at Novartis, including Global Head of Novartis Diagnostics from 2009-2012 before joining the company.

Ken Ludlum, Chief Financial Officer: Ken Ludlum joined CareDx in March 2014 as its Chief Financial Officer. Previously, Mr. Ludlum was Chief Financial Officer of medical device company Endogastric Solutions from 2011-2013 and served as an independent consultant to multiple biotechnology companies in 2009-2011. Mr. Ludlum's background also includes CFO experience with two prior public companies, including Perclose from 1995-2000 leading up to Abbott's acquisition of the company.

James Yee, M.D., Ph.D., Chief Medical Officer: James Yee has served as CareDx's Chief Medical Officer since joining the company in August 2006. Previously, Dr. Yee was Vice President and Head of Development for Celera Genomics from 2003-2006 and Vice President of Preclinical and Clinical Development at Roche Bioscience from 1995-2002.

Financials

Income Statement

We are modeling FY14 revenue of $25.7 million (+16.1% yoy), reflecting expectations for a 15.1% increase in AlloMap tests processed to 11,579 coupled with revenue backlog collections. Our FY14 estimate includes a negligible OUS contribution, with our forecast including virtually no revenue from either Europe or Canadian partnerships. Going forward, we anticipate OUS to become a more significant contributor, although we are only forecasting $0.3 million, $1.0 million and $1.9 million in FY15-FY17, respectively, representing a source of potential upside to our forecast. We anticipate CareDx to gain additional private payer reimbursement coverage, with collection on its revenue backlog (~$18 million as of 3/31/14) representing an additional source of potential upside to our forward projections. For FY15, our forecast includes a 19.5% test volume increase to 13,840, with AlloMap growing 14.2% to 13,229 tests and an initial 612 kidney transplant rejection assays (assuming 2H15 RUO launch), translating to a 13.5% yoy revenue increase to $29.1 million. In 2016, we are modeling 44.4% top-line growth to $42.1 million, with AlloMap test revenue increasing 21.5% to $34.4 million (+21.2%) and kidney tests growing 1,954.6% to 12,565 or $6.3 million. For 2017, we are modeling a 32.6% revenue increase to $55.8 million, reflecting a 93.6% yoy increase in kidney test volume to 24,327 ($16.1 million, +155.6%) and a 9.8% AlloMap test increase to 17,270 ($37.4 million, +8.5%). We view better than expected initial kidney ramp and OUS traction as potential upside drivers compared to our initial estimates.

For gross margin, we are modeling 65.0% in FY14, decreasing to 63.3% in FY15 and 61.9% in FY16, reflecting our expectations for cash revenue recognition for kidney, with gross margins increasing 150 bps to 63.4% in 2017. For sales & marketing, we are forecasting 25.3% of revenue in FY14, 24.5% in F2015, 20.0% in 2016 and 19.7% in FY17 as CareDx leverages its largely existing commercial infrastructure to ramp its kidney assay. We anticipate general & administrative leverage going forward, as expenses associated with being a public company are offset by steady top-line growth. For bottom-line, we are modeling a loss per share of ($0.60) in FY14, followed by ($0.50) in F2015 before reaching profitability in FY16 with $0.04 and $0.49 in FY17.

Balance Sheet and Cash Flow Statement

Following CareDx's 2Q14 capital raise ($37.2M in net proceeds), we are forecasting a 2Q14 net cash position of $43.3 million. We are modeling DSOs in the 33-41 day range, DIO in the 33-41 days range and days payable to be in the 26-28 day range.

We are modeling operating cash flow of ($4.1) million and ($6.1) million in FY14 and FY15, respectively. Our forecast includes FY14 incremental working capital of $0.1 million, $0.2 million in capital expenditures, translating into ($4.3) million in free cash flow. For FY15, we are modeling $0.7 million in incremental working capital combined with $0.8 million in capital expenditures, yielding ($6.9) million in free cash flow. Our model forecasts cash flow breakeven in 4Q16, followed by $5.3 million in cash flow generation in 2017. Based on our expectations for profitability in 3Q16 as well as modest working capital and capital expenditure needs, we believe CareDx's current cash position is sufficient to reach profitability.

Risks

Competition

We are unaware of any current viable competitors in CareDx's current non-invasive heart or pipeline kidney transplant rejection markets, although Canadian company Proof Centre is expected to launch a heart transplant rejection diagnostic in the next ~12 months. Additionally, Chronix Biomedical is expected to offer a 510(k) approved test directly to transplant centers for $200 (expected 2016 launch), lower than CareDx's current ASP, although the centers will need dedicated personnel and equipment to run the assay (i.e. actual cost greater than $200). Given Chronix does not have a transplant rejection assay on

	the market, we view this as a longer-term threat and we will watch for additional data from the company. Future competitive product launches represent a risk to our forecast.
Market Adoption	Our forward estimates are contingent on continued progress penetrating the heart transplant surveillance market. Penetration or customer retention rates below our expectations represent a risk to our forward estimates.
New Product Adoption	CareDx is developing a kidney transplant rejection test. Delays in the kidney pipeline development or adoption rates below our expectations represents a risk for CareDx, potentially impacting the company's ability to meet our forecasted revenue and profitability estimates.
Profitability	We are forecasting negative operating income and net losses for CareDx through 1Q16, modeling positive operating income in 2Q16 followed by EPS in 3Q16. Failure to hit our top-line projections or higher-than-expected operating expenses could delay profitability.
FDA Oversight of LDTs	Lab developed tests or LDTs are regulated by CMS under CLIA. FDA recently notified Congress on its intent to issue draft guidance on regulation of LDTs, with the agency taking a "risk based" approach in determining where to initially focus. AlloMap is FDA approved, so we see little current risk from potential FDA oversight of LDTs. That said, CareDx plans to launch its kidney transplant rejection as an LDT and based on FDA's regulatory plans, we anticipate the company to eventually seek regulatory approval for this and pipeline assays.
Revenue Concentration	Certain payers represent a large percentage of CareDx's revenue base, with Medicare representing 39% of AlloMap volume and 54% of 2013 revenue. We anticipate Medicare to represent a less prominent component of CareDx's revenue mix as the company gains favorable coverage decisions from additional payers, but any disruption or change in reimbursement rates from any of CareDx's large payers represents a risk to our forward projections.
Legal	CareDx has a non-exclusive license to use PCR and quantitative real-time PCR, currently utilizing the technology in its CLIA lab for its AlloMap assay. In 2014, Roche filed a demand for arbitration, seeking royalties for testing after July 1, 2011 ($1.9M) and unspecified royalties from April 2013-present. We view this as a potential risk for higher than expected legal expenses.

CareDx, Inc.
Income Statement
Fiscal Year End: Dec 31
($ in thousands)

Guides for the Journey | PiperJaffray

Updated as of 8/8/2014

William Quirk 612-303-6858
Piper Jaffray & Co.

	2014E				2015E				2016E								
	Mar Qtr 1 A	Jun Qtr 2 E	Sep Qtr 3 E	Dec Qtr 4 E	Mar Qtr 1 E	Jun Qtr 2 E	Sep Qtr 3 E	Dec Qtr 4 E	Mar Qtr 1 E	Jun Qtr 2 E	Sep Qtr 3 E	Dec Qtr 4 E	2013A	2014E	Annual 2015E	2016E	2017E
Total Revenue	**5,924**	**6,440**	**6,572**	**6,724**	**6,760**	**7,104**	**7,446**	**7,810**	**8,440**	**10,012**	**11,161**	**12,450**	**22,098**	**25,660**	**29,120**	**42,063**	**55,757**
Cost of Product Revenue	2,162	2,253	2,277	2,301	2,294	2,687	2,786	2,920	3,345	3,770	4,205	4,686	9,078	8,993	10,686	16,005	20,405
Gross Profit	**3,762**	**4,187**	**4,295**	**4,424**	**4,466**	**4,417**	**4,660**	**4,890**	**5,096**	**6,242**	**6,956**	**7,764**	**13,020**	**16,667**	**18,434**	**26,057**	**35,352**
Operating Expenses:																	
Research & Development - Total	720	1,400	1,575	1,700	1,870	1,972	1,999	1,946	1,922	1,863	1,847	1,802	0	5,395	7,787	7,434	8,117
Research & Development - Core	720	1,400	1,500	1,600	1,758	1,847	1,861	1,796	1,772	1,702	1,674	1,618	3,176	5,220	7,262	6,767	7,151
RUO Heart	-	-	75	100	113	125	138	150	150	161	173	184	0	175	525	667	966
Sales & Marketing	1,474	1,574	1,679	1,754	1,759	1,809	1,779	1,784	1,914	2,114	2,159	2,209	5,891	6,481	7,131	8,396	10,966
General & Administrative	1,795	1,835	1,850	1,900	1,927	1,954	1,973	1,992	2,026	2,102	2,199	2,241	4,808	7,380	7,845	8,568	9,322
Other									110	110	110	110					
Total Operating Expense	3,989	4,809	5,104	5,354	5,556	5,735	5,751	5,722	5,972	6,189	6,314	6,362	13,875	19,256	22,763	24,838	28,845
Operating Income (Loss)	**(227)**	**(622)**	**(809)**	**(930)**	**(1,089)**	**(1,317)**	**(1,091)**	**(832)**	**(876)**	**52**	**641**	**1,402**	**(855)**	**(2,589)**	**(4,330)**	**1,220**	**6,507**
Interest & other income (expense), net	(1,077)	(500)	(500)	(500)	(404)	(383)	(379)	(360)	(309)	(290)	(266)	(246)	(2,686)	(2,577)	(1,526)	(1,110)	(724)
Pretax Income (Loss)	**(1,304)**	**(1,122)**	**(1,309)**	**(1,430)**	**(1,493)**	**(1,700)**	**(1,470)**	**(1,192)**	**(1,185)**	**(238)**	**376**	**1,156**	**(3,540)**	**(5,166)**	**(5,856)**	**109**	**5,783**
Provision for Income Taxes	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Net Income (Loss) - Reported	**(1,304)**	**(1,122)**	**(1,309)**	**(1,430)**	**(1,493)**	**(1,700)**	**(1,470)**	**(1,192)**	**(1,185)**	**(238)**	**376**	**1,156**	**(3,540)**	**(5,166)**	**(5,856)**	**109**	**5,783**
SBC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Non-Recurring	0	0	0	0	0	0	0	0	110	110	110	110	0	0	0	440	440
Net Income (Loss) - Ongoing (w/ SBC)	(1,304)	(1,122)	(1,309)	(1,430)	(1,493)	(1,700)	(1,470)	(1,192)	(1,075)	(128)	486	1,266	(3,540)	(5,166)	(5,856)	549	6,223
Net Income (Loss) - Non-GAAP	(1,304)	(1,122)	(1,309)	(1,430)	(1,493)	(1,700)	(1,470)	(1,192)	(1,075)	(128)	486	1,266	(3,540)	(5,166)	(5,856)	549	6,223
Net Income (assuming 40% Tax)																	
Diluted EPS (Reported)	(0.21)	(0.15)	(0.12)	(0.12)	(0.13)	(0.15)	(0.12)	(0.10)	(0.10)	(0.02)	0.03	0.09	(0.35)	(0.60)	(0.50)	0.01	0.45
Diluted EPS (Ongoing, w/ SBC)	**(0.21)**	**(0.15)**	**(0.12)**	**(0.12)**	**(0.13)**	**(0.15)**	**(0.12)**	**(0.10)**	**(0.09)**	**(0.01)**	**0.04**	**0.10**	**(0.57)**	**(0.60)**	**(0.50)**	**0.04**	**0.49**
Avg. Share Outstanding, Diluted	6,172	7,379	11,379	11,479	11,579	11,679	11,779	12,107	12,207	12,307	12,407	12,507	6,172	9,103	11,786	12,357	12,757
Expense Variables:																	
Cost of Revenue	36.5%	35.0%	34.6%	34.2%	33.9%	37.8%	37.4%	37.4%	39.6%	37.7%	37.7%	37.6%	41.1%	35.0%	36.7%	38.1%	36.6%
Research & Development - Total	12.2%	21.7%	24.0%	25.3%	27.7%	27.8%	26.8%	24.9%	22.8%	18.6%	16.5%	14.5%					
Research & Development - Core	12.2%	21.7%	22.8%	23.8%	26.0%	26.0%	25.0%	23.0%	21.0%	17.0%	15.0%	13.0%	14.4%	20.3%	24.9%	16.1%	12.8%
RUO Heart	0.0%	0.0%	1.1%	1.5%	1.7%	1.8%	1.8%	1.9%	1.8%	1.6%	1.5%	1.5%					
Sales & Marketing	24.9%	24.4%	25.5%	26.1%	26.0%	25.5%	23.9%	22.8%	22.7%	21.1%	19.3%	17.7%	26.7%	25.3%	24.5%	20.0%	19.7%
General & Administrative	30.3%	28.5%	28.1%	28.3%	28.5%	27.5%	26.5%	25.5%	24.0%	21.0%	19.7%	18.0%	21.8%	28.8%	26.9%	20.4%	16.7%
Total Operating Expenses	67.3%	74.7%	77.7%	79.6%	82.2%	80.7%	77.2%	73.3%	70.8%	61.8%	56.6%	51.1%	62.8%	75.0%	78.2%	59.0%	51.7%
Effective Interest Rate, cash	0.4%	0.4%	0.4%	0.4%	0.5%	0.5%	0.6%	0.6%	0.7%	0.7%	0.8%	0.8%	-52.4%	-7.0%	-6.5%	-7.3%	-3.5%
Effective Tax Rate	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	0.0%	0.0%
Margin Analysis:																	
Gross Margin	63.5%	65.0%	65.4%	65.8%	66.1%	62.2%	62.6%	62.6%	60.4%	62.3%	62.3%	62.4%	58.9%	65.0%	63.3%	61.9%	63.4%
Incremenal Gross Margin	96.0%	86.4%	129.3%	103.7%	84.3%	34.7%	41.8%	42.9%	37.5%	62.8%	61.8%	62.0%	77.6%	102.4%	51.1%	58.9%	67.9%
Operating Margin	NM	NM	NM	NM	NM	NM	NM	NM	NM	0.5%	5.7%	11.3%	NM	NM	NM	2.9%	11.7%
Incremenal Operating Margin	58.4%	-37.3%	-62.3%	-165.9%	-103.2%	-104.7%	-32.3%	9.1%	19.2%	50.9%	49.6%	50.5%	126.7%	-48.7%	-50.3%	42.9%	38.6%
Pretax Margin	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	3.4%	9.3%	NM	NM	NM	0.3%	10.4%
Net Income Margin	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	3.4%	9.3%	NM	NM	NM	0.3%	10.4%
YoY Growth Rates:																	
Total Revenues	18.9%	18.0%	13.2%	14.8%	14.1%	10.3%	13.3%	16.2%	24.9%	40.9%	49.9%	59.4%	792.9%	16.1%	13.5%	44.4%	32.6%
Cost of Goods Sold (Product Sales)	1.8%	6.3%	-9.0%	-1.4%	6.1%	19.2%	22.3%	26.9%	45.8%	40.3%	51.0%	60.4%	94.0%	-0.9%	18.8%	49.8%	27.5%
Research & Development	-6.1%	1.7%	15.6%	32.7%	19.3%	14.9%	6.0%	1.7%	8.8%	16.9%	21.4%	23.8%	-61.8%	64.4%	39.1%	-6.8%	5.7%
S, G & A	-28.1%	65.5%	124.9%	142.1%	144.1%	31.9%	24.1%	12.3%	0.8%	-7.9%	-10.1%	-9.9%	-26.3%	10.0%	10.0%	17.7%	30.6%
Operating Expenses	9.7%	33.8%	40.5%	77.7%	39.3%	19.2%	12.7%	6.9%	7.5%	7.9%	9.8%	11.2%	-41.0%	38.8%	18.2%	9.1%	16.1%
Operating Income	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	433.5%
Pretax Income	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	5191.9%
Net Income (Reported)	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	5191.9%
Net Income (Ongoing)	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	1032.9%
EPS	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	1060.6%
Other Data:																	
Days Sales Outstanding	38.4	36.9	40.6	40.6	41.5	39.7	40.6	40.6	39.7	36.5	34.8	33.2	37.5	46.2	45.1	41.8	36.9
Inventory Turns	12.0	11.0	9.5	9.0	9.0	10.0	9.0	9.0	10.0	10.0	10.0	10.0	NA	NA	16.8	9.8	9.7
EBITDA Per Share	(0.02)	(0.08)	(0.07)	(0.08)	(0.09)	(0.11)	(0.09)	(0.06)	(0.06)	0.02	0.07	0.13	(0.03)	(0.25)	(0.35)	0.16	0.58
Free Cash Flow Per Share	0.20	(0.15)	(0.07)	(0.09)	(0.09)	(0.13)	(0.15)	(0.09)	(0.13)	(0.06)	(0.02)	0.01	0.33	(0.19)	(0.45)	(0.16)	0.45
Net Debt (Cash) Per Share	(0.49)	(5.87)	(3.54)	(3.23)	(2.93)	(2.60)	(2.25)	(1.94)	(1.63)	(1.40)	(1.19)	(1.22)	(0.83)	(4.07)	(1.99)	(1.24)	(1.62)

Source: Company reports and Piper Jaffray & Co. Current disclosure information for this company is located at http://www.piperjaffray.com/researchdisclosures.

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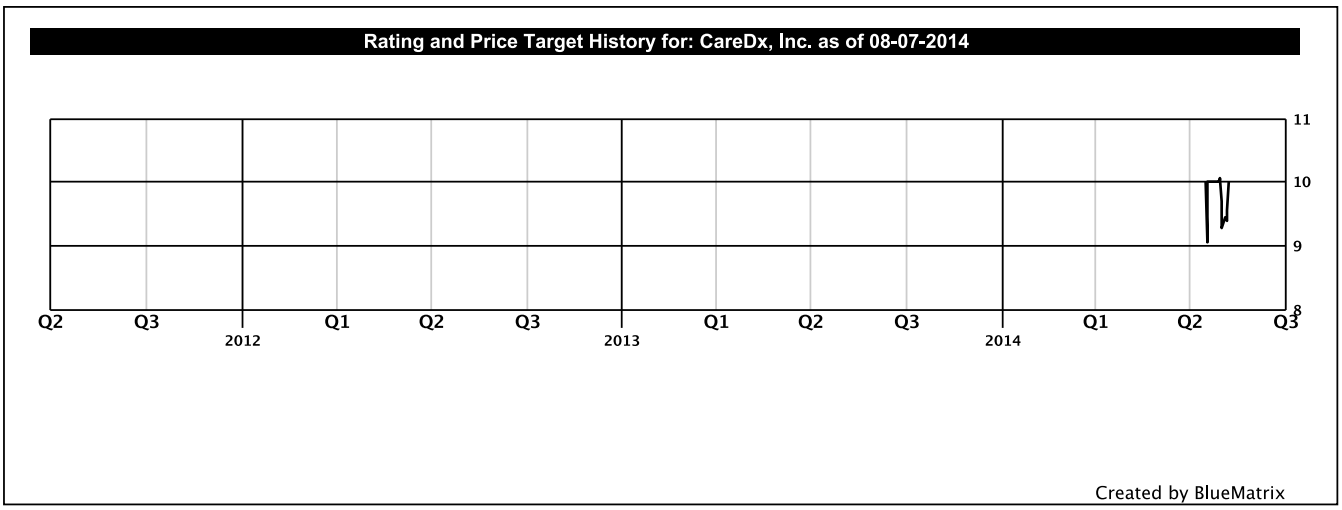

Notes: The boxes on the Rating and Price Target History chart above indicate the date of the Research Note, the rating, and the price target. Each box represents a date on which an analyst made a change to a rating or price target, except for the first box, which may only represent the first Note written during the past three years.

Legend:
I: Initiating Coverage
R: Resuming Coverage
T: Transferring Coverage
D: Discontinuing Coverage
S: Suspending Coverage
OW: Overweight
N: Neutral
UW: Underweight
NA: Not Available
UR: Under Review

Distribution of Ratings/IB Services
Piper Jaffray

			IB Serv./Past 12 Mos.	
Rating	Count	Percent	Count	Percent
BUY [OW]	359	61.68	94	26.18
HOLD [N]	212	36.43	23	10.85
SELL [UW]	11	1.89	0	0.00

Note: Distribution of Ratings/IB Services shows the number of companies currently in each rating category from which Piper Jaffray and its affiliates received compensation for investment banking services within the past 12 months. FINRA rules require disclosure of which ratings most closely correspond with "buy," "hold," and "sell" recommendations. Piper Jaffray ratings are not the equivalent of buy, hold or sell, but instead represent recommended relative weightings. Nevertheless, Overweight corresponds most closely with buy, Neutral with hold and Underweight with sell. See Stock Rating definitions below.

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