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CAVALIER HOSPITAL

Chief Complaint: Preparing for the Board Meeting

Dr. William Harrison, a cardiologist prominent in the community, peered over the balance sheets and income statements in Cavalier Hospital's annual report for 2010. Due to his role as the director of the recently opened Rotunda Cardiovascular Center, Harrison had been promoted to Cavalier Hospital's board of directors, whose next meeting was two weeks away. Harrison was hoping to bring himself up to speed on the hospital's overall financial condition.

Past Medical History: Cavalier Hospital

Founded in 1955, Cavalier Hospital was a 610-bed nonprofit hospital whose mission was to provide high-quality health care to the growing patient population in southern and central Virginia. Originally set up to serve the poor, nonprofit hospitals now accounted for the majority of U.S. hospitals. Their nonprofit status granted them an exemption from paying taxes, thus enabling them to channel the income they generated back into the hospital's operations—rather than saving the profits as cash or distributing them to shareholders—with the goal of encouraging hospitals to continue to expand and provide benefits to the local community.

Most of Cavalier Hospital's patients were Virginia residents. Nearly 50% of the patients seen at Cavalier Hospital lived within 30 miles of the facility; another 25% came from the five surrounding counties, and 10% lived elsewhere in Virginia. About 15% came from out of state, mostly from West Virginia and North Carolina.

Cavalier Hospital competed for patient traffic with two other regional hospitals, one of which was the recently expanded Hamilton Hospital. Formed by a merger between the Washington and Adams hospitals in 2000, Hamilton approached private physician groups with offers to buy their practices and hire the physicians on salary. Given the growing influence of health insurers and declining reimbursement rates for physicians' services, many private practitioners saw this as an opportunity to partner with a larger hospital system that would have

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more clout in negotiating favorable reimbursement from governmental and private payers. As a result, Hamilton Hospital had grown to an operation with 9,000 employees and more than $600 million in assets.

History of Present Illness: The Rotunda Cardiovascular Center

Historically, the vast majority of Cavalier Hospital's patients had been referred by local physicians; over the past few years, with the expansion of Hamilton Hospital, these referrals had been in decline. In response, Cavalier's board of directors had adopted a new growth strategy, beginning with the creation of a cardiovascular care center that had opened in the beginning of 2008.

The board of directors believed that the trend towards greater obesity, combined with the aging population in central Virginia, represented a significant market opportunity for Cavalier Hospital to respond to the increasing competition from Hamilton Hospital. Traditionally, 51% of new cardiology patients at Cavalier Hospital were referred by non-Cavalier physicians and 30% by Cavalier primary care physicians or other specialists; the remaining 19% were self-referred. But in recent years the number of new cardiology patients referred by outside physicians had declined to 25%.

In 2007, the American Heart Association estimated that cardiovascular disease cost Americans more than $300 billion in direct costs—including lost productivity, $503 billion. Physicians at Cavalier Hospital had always excelled in providing state-of-the-art cardiovascular care, which included treatment for common diseases such as high blood pressure, heart failure, coronary artery disease, and cardiac rhythm abnormalities. The principal physicians involved in the care of these diseases included primary care physicians, cardiologists, interventional cardiologists, cardiac surgeons, and radiologists.

Trends among the nation's leaders in cardiovascular care confirmed Cavalier Hospital's desire to expand into integrated cardiovascular care. The 1,210-bed Cleveland Clinic, ranked first in "Heart and Heart Surgery" by *U.S. News & World Report*, had recently opened a new facility for its multidisciplinary Heart and Vascular Institute. At the institute, physicians from all of the relevant cardiovascular specialties reported to the head of the institute, who was in charge of all physicians and activities in the institute. Cavalier Hospital had followed the Cleveland model when creating the Rotunda Cardiovascular Center.

The new Rotunda Cardiovascular Center co-located all of the physicians involved in the treatment of cardiovascular disease in one center to provide one-stop shopping for comprehensive treatment of cardiovascular disease. It housed a welcoming lobby and atrium on the first floor for visiting patients and families. The second floor contained the outpatient clinic rooms, rehabilitation facilities, and treadmill testing rooms. The third floor contained hybrid operating suites, catheterization labs, clinical laboratories, and imaging facilities. Patients could receive almost any diagnostic cardiac test, from the newest 3-D nuclear stress test to cardiac

magnetic resonance imaging (cardiac MRI). The fourth floor contained 60 state-of-the-art, hotel-styled inpatient suites that were ICU-adaptable. The goal of the hotel-style suites was to allow families to have a more active role in the healing process. All in all, the new four-story, 188,000 square-foot center had cost approximately $70 million. There was some discussion regarding whether the center met the hospital's specified 8% hurdle rate of investment.[1]

Harrison, who had run his own private cardiology practice for many years in the community, was recruited to Cavalier Hospital to serve as director of the new center. He successfully pulled in a number of local cardiology practices, and Cavalier Hospital was already witnessing a rebound in patient traffic (**Exhibit 1**). A regional newspaper had recently published a story lauding the hospital's growth and new additions:

> It all began with the Rotunda Cardiovascular Center. Despite suffering a decline in patient traffic from 2000 to 2006, Cavalier Hospital has recently seen a 10% increase in inpatient volume and a 25% increase in outpatient visits. Revenue growth has jumped from $90 million to $137 million in only 4 years.
>
> Dr. William Harrison explained, "We realized that cardiovascular disease was growing at an alarming rate in the state of Virginia and hoped to utilize state-of-the-art equipment and a multidisciplinary team-centered approach to treat heart disease. We are excited that patients in the area are beginning to take an active interest in what we're doing—we're paving the way for a healthier society."

As part of his role as director, Harrison had been involved in negotiations with several of the region's major health insurers to determine new terms for reimbursement rates. In addition to attracting the attention of physicians and patients, the front-page press covering the Rotunda Cardiovascular Center resulted in several new health insurance companies approaching Cavalier Hospital, each hoping to include the hospital in its network of physician providers. Historically, 50% of the hospital's revenue came from third-party payers.[2] Traditionally, third-party payers reimbursed hospitals at a premium to Medicare on most procedures; consequently, Cavalier Hospital hoped to increase its market share among third-party payers to improve profit margins on many of its services. Another 30% of revenues came from Medicare and 15% from self-pay patients. It was estimated that 5% of revenues represented Medicaid and uncompensated care.

A common health policy criticism of *fee-for-service* payments, particularly prevalent in cardiovascular care, was that physicians were ordering more expensive tests (e.g., nuclear stress test imaging and catheterizations) because they were more profitable than older diagnostic tests.

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[1] The *hurdle rate of investment* was used to set a threshold for the expected rate of return for any investment proposal. Ideally the hurdle rate reflected the market's prevailing risk-adjusted cost of capital. A project whose expected internal rate of return exceeded the hurdle rate was expected to generate economic profit, whereas one that did not was not.

[2] *Third-party payers* referred to private, nongovernmental health insurance companies.

Consequently, the fee-for-service system was seen as creating incentives for cardiologists to utilize new equipment preferentially to help generate revenue that would offset the equipment's high initial cost.

Fee-for-service payment schemes were in contrast to *capitated* payment arrangements, in which insurance companies paid health care providers for the number of patients treated rather than per specific procedure. However, many health policy experts felt that these arrangements caused hospitals to undertreat patients, because once the hospital had collected payment it had little incentive to order additional tests or treatments for the patient.

An emerging trend in reimbursement negotiations for integrated care units, such as the Rotunda Cardiovascular Center, was for third-party payers instead to use bundled payments to hospitals for assuming the care of a certain number of a health plan's patients with a given condition (e.g., hypertension, stable angina, myocardial infarction, congestive heart failure). Bundled care was a variation on capitation with one crucial difference: payment was contingent on the health care provider achieving an aggregate level of acceptable health outcomes negotiated by both the insurance company and the provider. By tying payment to health outcomes, some experts believed it would correct the perverse incentives created by older capitation arrangements.

In negotiating with the new health insurance companies that had approached Cavalier, Harrison decided that it would be best to seek this capitation-based bundled payment. Harrison explained:

> In the past it was difficult to use bundled payment schemes, because the cardiologists and the cardiac surgeons were in different departments. Now that we have adopted an integrated-systems-based approach to cardiac care, we can begin to offer bundled packages to health insurers. We think it makes more sense. Why not get paid the same amount for the same medical condition? That way, it doesn't matter if we decide to use a nuclear stress test or an exercise stress test for a given patient because we aren't charging the insurance company for the test. In fact, we can go ahead and use the state-of-the-art technology without having to seek insurance approval each time because it doesn't cost the insurance company or patient extra money if we use the equipment. We get paid for assuming the total cardiac care of the patient each year so long as our risk-adjusted outcomes beat the national averages for outcomes data. For those patients in our capitation-based packages, we have yet to miss any of those benchmarks.

Excited by the prospect of both not having to authorize payment for every diagnostic test a patient received and using a payment scheme that would encourage better health outcomes (and reduce longer-term costs for the health plan's patients), four insurance companies had decided to negotiate for bundled pricing; the rest remained on the traditional fee-for-service model. Harrison remarked, "We're really excited about this. We offered very competitive rates to these insurance companies to encourage adoption. Some decided to take advantage of it."

Diagnosis and Treatment: Preparing for the Board Meeting

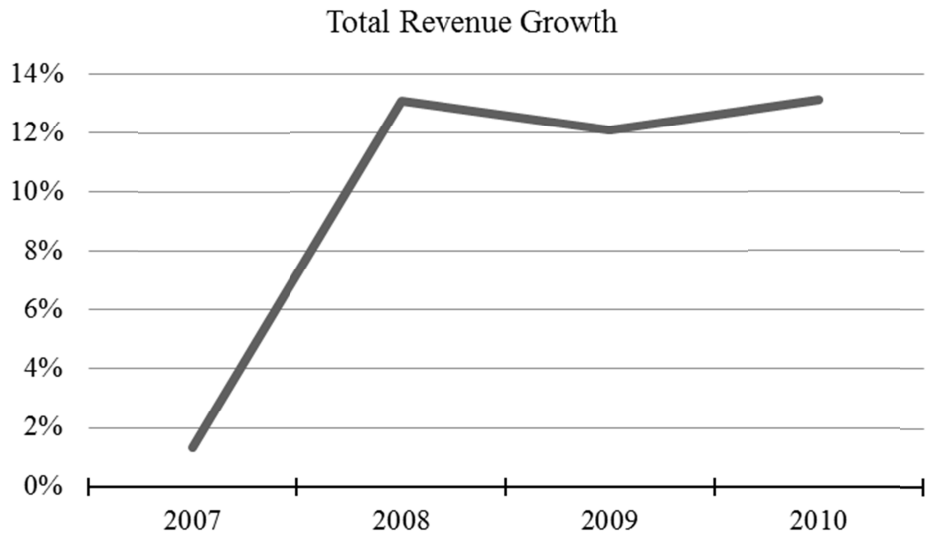
As Harrison contemplated both the challenges the hospital faced and the success of the new Rotunda Cardiovascular Center, which had now been open for three years, he peered over several of the slides (**Exhibits 1** and **2**), annual report exhibits (**Exhibit 3**), and financial statements (**Exhibits 4** and **5**) that had been prepared for the next board meeting. Using the financial statements, he conducted a financial and operating ratio analysis of the hospital to better understand the data (**Exhibits 6** and **7**). The newly negotiated contracts had resulted in an incredible expansion of both patient volume and hospital revenue. He hoped to use his analysis to assess the current financial condition of the hospital and the true significance of the hospital's recent growth. In conducting the financial analysis, he was reminded of the debate in a recent issue of the *New England Journal of Medicine* regarding the proper identification of value in health care (**Exhibit 9**).

With information at hand, he hoped to help the board review the performance of the hospital and be able to assess the Rotunda investment so as to decide whether the hospital should continue to expand the Rotunda model to additional specialties.

Exhibit 1

CAVALIER HOSPITAL

Sample Slides on Hospital Growth
from the 2010 Presentation to the Cavalier Hospital Board



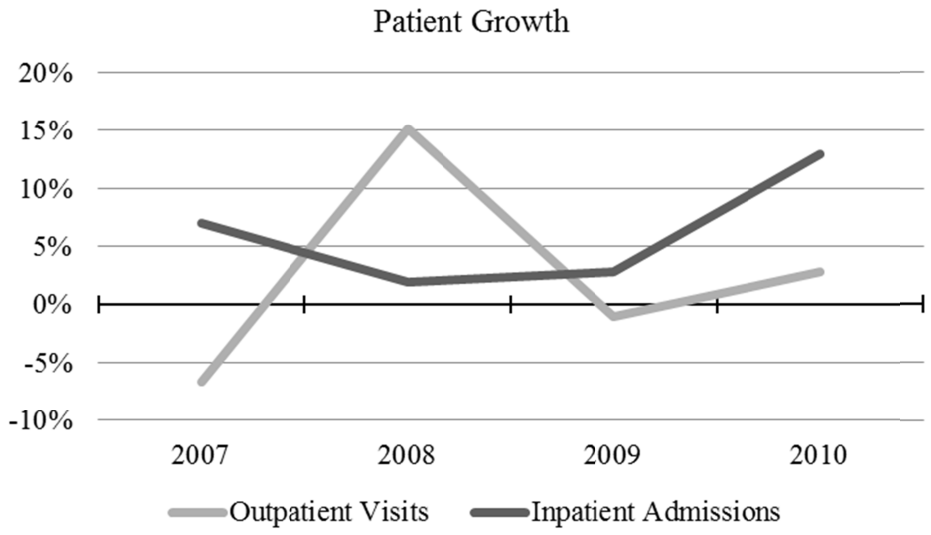


Exhibit 2

CAVALIER HOSPITAL

Sample Slide on Hospital Revenue Classification
from the 2010 Presentation to the Cavalier Hospital Board

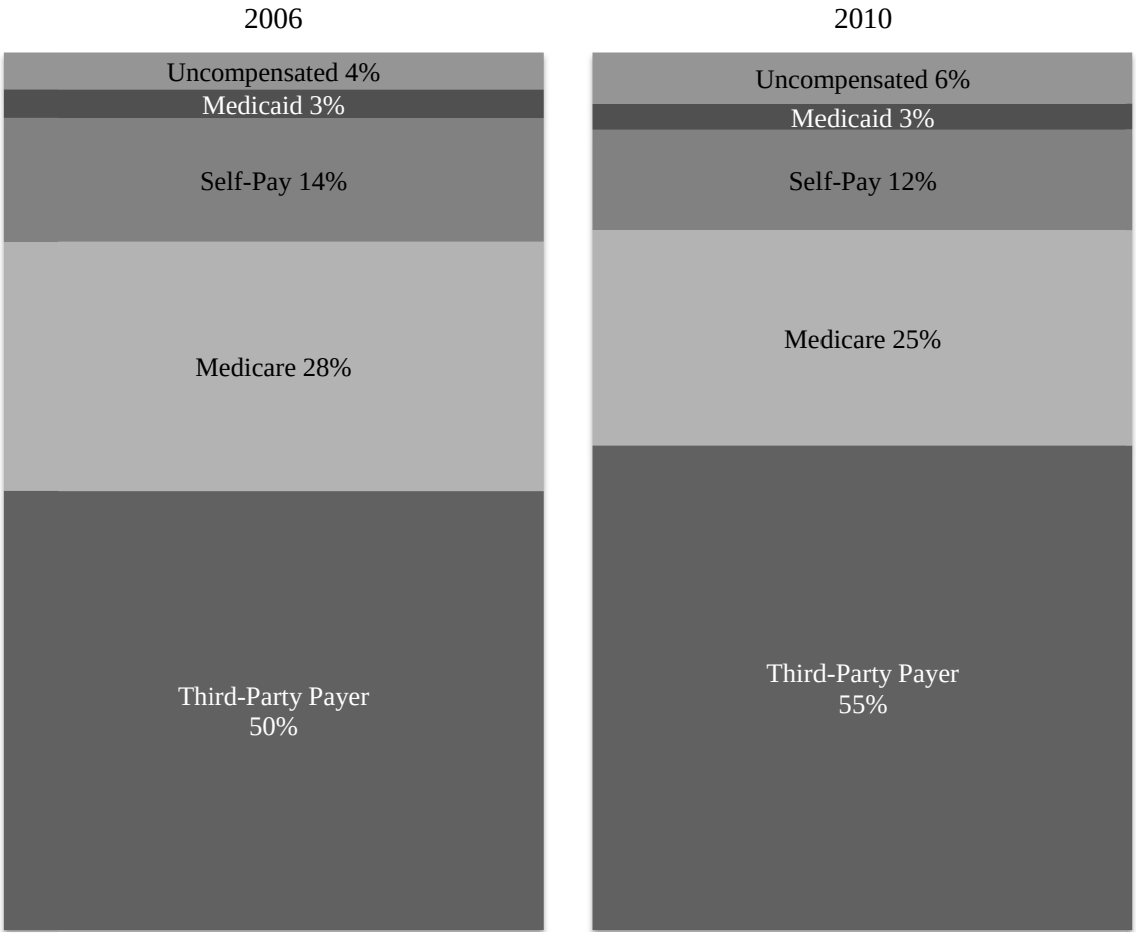
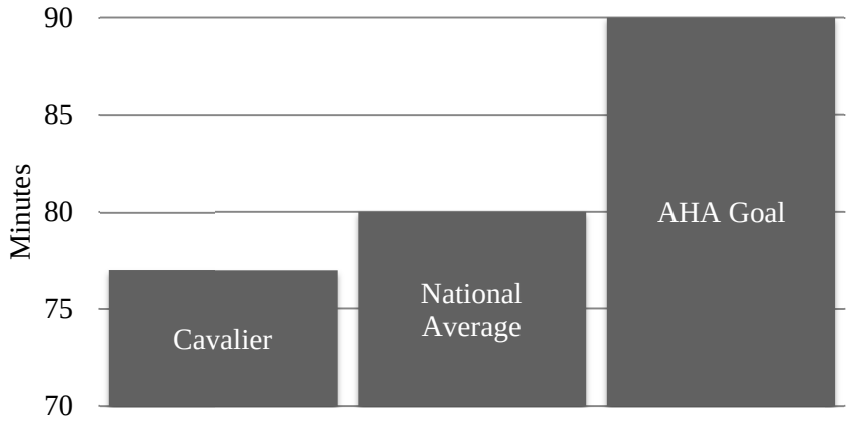


Exhibit 3

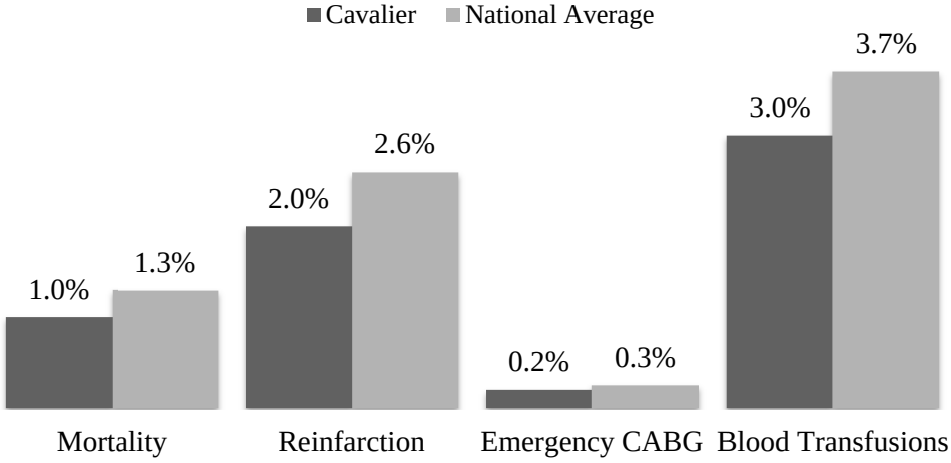
CAVALIER HOSPITAL

Sample Outcomes Data from the 2010 Cavalier Hospital Annual Report

Door-to-Balloon Time, 2010[1]



PCI Complications, 2010[2]



[1] *Door-to-balloon time* is the time interval that begins when a patient having a heart attack arrives at an E.R. with chest pain and ends with the implantation of a stent to reopen a blocked coronary artery.

[2] *PCI* is *percutaneous coronary intervention*, the procedure through which a stent is inserted through the leg up into a coronary artery to treat a heart attack. Although usually successful and far less invasive than open-heart surgery (coronary artery bypass grafting [CABG]), the procedure can result in death (mortality), further heart attacks (reinfarction), conversion to open-heart surgery (emergency CABG), and blood loss (requiring transfusion).

Exhibit 4

CAVALIER HOSPITAL

Cavalier Hospital Income Statement (in millions of dollars)

REVENUE	2006	2007	2008	2009	2010
Gross Patient Revenues	151.3	152.4	185.4	205.4	240.2
Contractual Allowances[1]	-64.9	-64.6	-85.9	-94.9	-114.2
Charity Care[2]	-6.4	-7.4	-9.5	-11.4	-14.0
Net Patient Revenues	80.0	80.4	90.0	99.2	112.0
Trust/Endowment Income	10.5	9.7	12.7	14.4	16.6
Auxillary Income[3]	3.6	5.3	5.2	7.3	8.3
Total Revenue	94.1	95.4	107.9	120.9	136.8

EXPENSES	2006	2007	2008	2009	2010
Operating Expenses	70.7	72.7	84.0	96.7	113.4
Depreciation and Amortization	4.9	5.0	5.9	6.7	7.8
Interest	1.2	3.5	5.2	5.8	4.9
Provision for Bad Debt	1.5	1.5	1.8	2.0	2.3
Total Expenses	83.0	85.3	98.5	113.5	129.6
Net Income	11.1	10.1	9.3	7.4	7.2

[1] Amounts discounted from listed rates as a result of agreements with third-party payers, including Medicare, Medicaid, and private insurers.

[2] Uncompensated care for the indigent.

[3] Funds received from dining facilities, parking fees, gift shop sales, and vending machine sales.

Exhibit 5

CAVALIER HOSPITAL

Cavalier Hospital Balance Sheet (in millions of dollars)

ASSETS	2006	2007	2008	2009	2010
Cash and Cash Equivalents	2.7	2.4	5.9	4.8	7.9
Accounts Receivable (Net)	18.2	19.5	24.5	28.4	30.1
Inventories	1.4	1.4	1.9	2.1	2.4
Total Current Assets	22.6	23.3	32.4	35.3	40.3
Plant, Property, and Equipment (Net)	78.5	113.6	143.5	150.3	147.8
Total Assets	100.9	136.9	175.9	185.7	188.1

LIABILITIES	2006	2007	2008	2009	2010
Accounts Payable	10.1	10.3	13.6	15.0	16.5
Current Portion of Long-Term Debt	2.2	2.0	2.6	4.7	2.7
Total Current Liabilities	12.3	12.3	16.2	19.7	19.2
Long-Term Debt	19.1	49.2	64.6	78.8	76.6
Total Liabilities	27.3	61.6	80.8	98.6	95.8

EQUITY	2006	2007	2008	2009	2010
Total Equity (Net Assets)	73.6	75.3	95.1	87.1	92.3

Exhibit 6

CAVALIER HOSPITAL

Cavalier Hospital Financial Ratio Analysis

PROFITABILITY RATIOS	2006	2007	2008	2009	2010	*Comparables* [1]
Profit Margin	11.8%	10.5%	8.6%	6.1%	5.3%	6.0%
Return on Assets (ROA)	11.0%	7.3%	5.3%	4.0%	3.8%	4.2%
Return on Equity (ROE)	15.1%	13.3%	9.8%	8.5%	7.8%	12.8%
NET REVENUE RATIOS	2006	2007	2008	2009	2010	*Comparables* [1]
Contractual Allowance Percentage	42.9%	42.4%	46.3%	46.2%	47.5%	43.2%
Charity Care Percentage	4.2%	4.9%	5.1%	5.5%	5.8%	5.0%
ASSET MANAGEMENT RATIOS	2006	2007	2008	2009	2010	*Comparables* [1]
Days Cash on Hand	12.6	10.9	23.4	16.5	23.5	16.1
Accounts Receivable Turnover	5.2	4.9	4.4	4.3	4.5	6.3
AR Days Until Collected	70.7	74.6	83.1	85.8	80.4	57.9
Inventory Turnover	65.4	68.1	57.4	57.9	58.0	60.1
Current Asset Turnover	4.2	4.1	3.3	3.4	3.4	4.1
Plant, Property, and Equipment Turnover	1.2	0.8	0.8	0.8	0.9	1.5
Total Asset Turnover	0.9	0.7	0.6	0.7	0.7	0.9
LIABILITY AND LIQUIDITY RATIOS	2006	2007	2008	2009	2010	*Comparables* [1]
Accounts Payable Turnover	7.0	7.0	6.2	6.5	6.9	6.5
AP Days Until Paid	52.2	51.9	59.0	56.5	53.0	56.5
Current Ratio	1.8	1.9	2.0	1.8	2.1	2.0
Debt-to-Equity Ratio	0.3	0.7	0.7	1.0	0.9	0.7
Asset-to-Equity Ratio	1.4	1.8	1.8	2.1	2.0	1.6

Calculation Formulas

Profit Margin	(Net Income) / (Total Revenue)
Return on Assets (ROA)	(Net Income) / (Total Assets)
Return on Equity (ROE)	(Net Income) / (Total Equity)
Contractual Allowance Percentage	(Contractual Allowance) / (Gross Revenue)
Charity Care Percentage	(Charity Care) / (Gross Revenue)
Days Cash on Hand	(Cash) / (Total Expenses – Depreciation) * 365
Accounts Receivable Turnover	(Total Revenue) / (Accounts Receivable)
AR Days Until Collected	(Accounts Receivable) / (Total Revenue) * 365
Inventory Turnover	(Total Revenue) / (Inventory)
Current Asset Turnover	(Total Revenue) / (Total Current Assets)
Property, Plant, and Equipment Turnover	(Total Revenue) / (Property, Plant, and Equipment)
Total Asset Turnover	(Total Revenue) / (Total Assets)
Accounts Payable Turnover	(Operating Expenses) / (Accounts Payable)
AP Days Until Paid	(Accounts Payable) / (Operating Expenses) * 365
Current Ratio	(Current Assets) / (Current Liabilities)
Debt-to-Equity Ratio	(Total Debt) / (Total Equity)
Asset-to-Equity Ratio	(Total Assets) / (Total Equity)

[1] *Comparables* are defined as regional hospitals of similar size and objective.

Exhibit 7

CAVALIER HOSPITAL

Cavalier Hospital Operating Statistics

INPATIENT ACTIVITY	2006	2007	2008	2009	2010
Total Discharges	28,680	26,776	30,828	30,519	31,388
Third-Party Payer Discharges	14,346	13,575	16,586	16,441	17,325
Medicare Discharges	8,155	8,010	8,207	8,371	8,539
Self-Pay Discharges	4,051	3,508	3,730	3,689	3,610
Medicaid Discharges	918	803	904	864	908
Uncompensated Discharges	1,211	1,301	1,586	1,689	1,835
Third-Party Payer	*50.0%*	*50.7%*	*53.8%*	*53.9%*	*55.2%*
Medicare	*28.4%*	*28.3%*	*26.0%*	*25.7%*	*24.6%*
Self-Pay	*14.1%*	*13.1%*	*12.1%*	*12.1%*	*11.5%*
Medicaid	*3.2%*	*3.0%*	*2.9%*	*2.8%*	*2.9%*
Uncompensated	*4.2%*	*4.9%*	*5.1%*	*5.5%*	*5.8%*
Average Daily Census	482	451	516	549	556
Total Hospital Beds	610	610	670	670	670
Hospital Bed Occupancy Rate (%)	79%	74%	77%	82%	83%
Patient Days	158,983	145,506	173,977	166,428	179,648
Average Length of Stay	5.5	5.4	5.6	5.5	5.7

AMBULATORY ACTIVITY	2006	2007	2008	2009	2010
Total Outpatient Clinic Visits	90,226	96,550	98,469	101,233	114,365
Cardiac Center Visits	7,061	7,405	7,938	8,319	9,606
Total Laboratory Procedures	408,202	432,441	459,795	477,884	550,802
Per Outpatient Visit	4.52	4.48	4.67	4.72	4.82
Total Imaging Studies	71,996	74,730	84,859	88,856	99,927
Per Outpatient Visit	0.80	0.77	0.86	0.88	0.87

OTHER	2006	2007	2008	2009	2010
Number of Full-Time Employee Equivalents	1,517	1,521	1,698	1,890	2,074
Average Salary (Including Benefits)	$46,625	$47,791	$49,463	$51,195	$53,242

Exhibit 8

CAVALIER HOSPITAL

Rotunda Cardiovascular Care Financial Statements (in millions of dollars)

REVENUE	2008	2009	2010
Gross Patient Revenues	14.9	16.9	20.2
Contractual Allowances[1]	-7.5	-8.4	-9.9
Charity Care	-0.9	-1.0	-1.3
Net Patient Revenues	6.6	7.5	9.0
Additional Revenue[1]	1.4	1.8	2.1
Total Revenue	8.0	9.3	11.1
Approximate Expenses[1]	7.9	9.5	10.9
Net Income	0.1	-0.2	0.2
Approximate Assets[2]	70.0	70.0	70.0

PROFITABILITY RATIOS	2008	2009	2010	*Formula*
Profit Margin	1.3%	-2.6%	2.2%	(Net Income) / (Total Revenue)
Return on Assets (ROA)	0.1%	-0.3%	0.3%	(Net Income) / (Total Assets)

NET REVENUE RATIOS	2008	2009	2010	*Formula*
Contractual Allowance Percentage	49.9%	49.9%	49.2%	(Contractual Allowance) / (Gross Revenue)
Charity Care Percentage	6.0%	5.9%	6.2%	(Charity Care) / (Gross Revenue)

[1] Allocated based on outpatient and inpatient cardiac patient volume as a percentage of patient volume for the entire hospital.

[2] Based on the $70 million investment in the center.

Exhibit 9

CAVALIER HOSPITAL

Excerpt from Michael E. Porter, "What Is Value in Health Care?,"[1] and Response

In any field, improving performance and accountability depends on having a shared goal that unites the interests and activities of all stakeholders. In health care, however, stakeholders have myriad, often conflicting goals, including access to services, profitability, high quality, cost containment, safety, convenience, patient-centeredness, and satisfaction. Lack of clarity about goals has led to divergent approaches, gaming of the system, and slow progress in performance improvement.

Achieving high value for patients must become the overarching goal of health care delivery, with value defined as the health outcomes achieved per dollar spent. This goal is what matters for patients and unites the interests of all actors in the system. If value improves, patients, payers, providers, and suppliers can all benefit while the economic sustainability of the health care system increases.

Value—neither an abstract ideal nor a code word for cost reduction—should define the framework for performance improvement in health care. Rigorous, disciplined measurement and improvement of value is the best way to drive system progress…Value should always be defined around the customer, and in a well-functioning health care system, the creation of value for patients should determine the rewards for all other actors in the system...

Outcomes, the numerator of the value equation, are inherently condition-specific and multidimensional. For any medical condition, no single outcome captures the results of care. Cost, the equation's denominator, refers to the total costs of the full cycle of care for the patient's medical condition, not the cost of individual services. To reduce cost, the best approach is often to spend more on some services to reduce the need for others.

Letter to the editor from Tilburt, Montori, and Shah of the Mayo Clinic:[2]

In his Perspective article, Porter defines "value" as "outcomes relative to cost." His views represent a payer-centered perspective rather than a patient-centered one and reduce caring to "services" in a (mythical) health care marketplace. His "value" could reward mediocre outcomes delivered cheaply—a bargain for payers, not patients. Moreover, paying for value on the basis of long-term outcomes in patients with chronic disease will remain an important challenge for the foreseeable future.

Value from patients' perspective—if we were to ask them—should reward high-quality, affordable care, no doubt. But it would also reward practitioners whose care centers around the patient, not solely "value" based on cost, measurable outcomes, and efficiency metrics. Judged by Porter's metric, "amenities" such as chaplain services, fine art, and an unhurried examination would quickly become extinct.

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[1] Michael E. Porter, "What Is Value in Health Care?," *New England Journal of Medicine* 363 (December 2010): 2477–81.

[2] Jon C. Tilburt, M.D., Victor M. Montori, M.D., and Nilay D. Shah, Ph.D., letter to the editor, *New England Journal of Medicine* 364 (March 2011): e26.