According to the American Cancer Society’s annual Cancer Facts & Figures 2013 report, approximately 1.6 million Americans will be diagnosed and 580,000 will die from cancer during 2013. However, while cancer remains the second most common cause of death in the U.S., more people are surviving the disease than ever before. As such, organizations such as hospitals, health systems, and medical practices that specialize in oncology medical services are and will continue to be in high demand. Like the disease, which is defined as the division and growth of abnormal cells, businesses that engage in the provision of cancer treatment services have endured and will continue to face vast amounts of change in order to provide the most up-to-date quality care to their patients.

**Alignment Trend**

Hospitals and health systems, academic medical centers, physicians, and other related entities are strategically aligning at a fast pace across multiple specialties, and this is especially true within the oncology subsector for a myriad of reasons. Declining reimbursement rates, rising operating and capital costs, and significant shortages of oncologists are just some of the key factors influencing cancer care providers to align with other organizations in an effort to improve quality of care in a more efficient and cost-effective manner. Further, healthcare reform continues to be a key consolidation catalyst as hospitals look to gain economies of scale to offset future reimbursement cuts. For example, from 2008 to 2012, there were 131 oncology M&A transactions totaling approximately $92 billion.

Physician practices in metropolitan areas are more likely to experience mergers than those in rural areas. Furthermore, larger practices reported greater likelihood of purchasing other practices in 2013; whereas, smaller practices reported greater likelihood of closing or selling their practices and becoming employed by hospitals. Cancer center joint ventures, such as between large academic medical centers and smaller rural hospitals, have also become much more prevalent in the past few years. Additionally, from 2008 to 2012, 569 oncology license and joint venture deals worth a total of $44.7 billion occurred. Successful joint ventures can help deliver higher quality care to patients located in areas with limited resources, lower operating costs, and increase market share for healthcare providers. The above factors, as well as the aging U.S. population which will increase the demand for cancer services, are helping drive a significant number of complex transactions requiring valuation expertise.

**Regulatory Compliance Issues**

In addition to the above factors, key regulatory considerations that affect oncology businesses must be understood and addressed in the valuation process. The healthcare industry is very highly regulated. Accordingly, a solid understanding of any applicable regulatory restrictions is critically important when attempting to value a healthcare entity. Key regulatory issues that generally apply to transactions between physicians and hospitals or other medical facilities include the federal Anti-Kickback Statute (AKS), the Ethics in Patient Referrals Act (Stark Law), and the IRS’ intermediate sanctions regulations and prohibitions against private inurement.

The AKS makes it a felony to offer, pay, accept, or solicit payment for the referral of, or the arranging for, the referral of items, services, or patients reimbursed by any federal or state healthcare program. The Stark Law prohibits a physician with a financial relationship with an entity that provides certain “designated health services” from referring patients to the entity. Additionally, tax-exempt organizations, which include many hospitals, must be operated exclusively for charitable purposes and abide by regulations requiring that no part of its earnings inure to private shareholders or individuals. The AKS, Stark Law, and IRS’ tax-exempt restrictions all have their own regulations and exceptions; however, they each include the common requirement that applicable transactions must be at fair market value (FMV). For example, in order to meet safe harbor or exception provisions of the AKS and Stark laws, respectively, arrangements between physicians and hospitals related to designated health services (DHS) must be at FMV.
The Stark Law defines fair market value as the value in arm’s-length transactions, consistent with the general market value. “General market value” means “the compensation that would be included in an agreement as the result of bona fide bargaining between well-informed parties to the agreement who are not otherwise in a position to generate business for the other party at the time of the agreement. Further, the IRS has defined FMV as the price at which the property would change hands between a willing buyer and a willing seller “neither being under any compulsion to buy, sell or transfer property or the right to use property, and both having reasonable knowledge of relevant facts.” Accordingly, ensuring that the financial terms of an applicable oncology business transaction are at FMV is a significant issue for all parties, and requires the appraiser to have a solid understanding of the industry.

Overview of the Oncology Industry
Cancer services, including surgery and medical and radiation oncology, are provided in a variety of settings such as private oncology practices, community hospitals, academic medical centers, and freestanding cancer centers.

Service providers include:

Oncology Practices. Oncology practices can be organized into single specialty or multispecialty businesses. In 2012, according to a census conducted by the American Society of Clinical Oncology (ASCO) of more than 600 U.S. oncology practices, 55% of respondents worked in private community practices, 12.4% were part of non-academic institutions, 11.3% worked in academic practices, and 9.8% were in private integrated practices that are part of large health systems. For medical specialties, 71% of respondents reported a hematology/oncology specialty, 23.4% reported a specialty of medical oncology, and 20% reported practicing radiation oncology. Further, with the elderly population predicted to rise significantly in the future, the demand for oncology services is anticipated to substantially outpace capacity by 2020. In 2012, there was an estimated 2.6% increase in new cancer cases from the previous year.

Community Hospitals. Community cancer centers are often organized within a hospital system. Properly organized and maintained, community cancer centers have a unique opportunity to provide comprehensive oncology care by offering both medical and radiation oncology clinical services as well as a full range of complementary supportive care services, and oftentimes access to oncology clinical trials. Many community cancer centers are accredited by the American College of Surgeons Commission on Cancer (CoC), of which there are more than 1,500 nationwide. However, organizing and sustaining a community center presents considerable challenges, such as overcoming the staunch independence of private practice physicians, ongoing economic issues associated with providing care to the underinsured and uninsured, and conflicts over diverting revenues to support unreimbursed activities such as patient navigation and other supportive care services.

Academic Medical Centers. In addition to the same oncology clinical services provided in community cancer centers, academic medical centers often have extensive programs in both basic and clinical cancer research, education, and training. Many of the academic cancer centers are National Cancer Institute (NCI) designated and devote substantial resources to researching and developing more effective approaches to prevent, diagnose, and treat cancer. The majority of the 67 NCI-designated centers are affiliated with university medical centers.

Freestanding Cancer Centers. Freestanding cancer centers are typically entities unto themselves and not part of a larger organization. Some centers, such as St. Jude Children’s Research Hospital, Memorial Sloan-Kettering Cancer Center, and M.D. Anderson Cancer Center, are independent nonprofit organizations. Also, a number of private and public oncology companies operate freestanding centers that are not affiliated with a hospital or health system such as US Oncology and Radiation Therapy Services, Inc. (RTSX). In addition, at least one private for-profit company, Cancer Treatment Centers of America, provides a wide array of oncology services at both hospitals and outpatient clinics.

Multiple Treatments Available
Multiple treatment options are available for most cancer patients, depending of course on individual facts and circumstances. However, the revenue and profitability of the various treatment options can vary substantially. Although new and improved options are constantly being sought, the most common categories of cancer treatments today include medical oncology, radiation therapy, and surgery. Since most current oncology transactions involve medical and radiation oncology providers, the focus here is primarily on these services.

Medical Oncology
Medical oncology includes the treatment of cancer with medications, such as chemotherapy and analgesics, that are often administered as a standalone treatment option or in combination with radiation therapy. The treatments are mainly
provided in an outpatient setting, such as an infusion center affiliated with a physician practice or hospital. Chemotherapy infusion is a central treatment for many types of cancers and consists of medication being administered through a needle or catheter via an infusion pump. Relative to radiation therapy, the capital costs for a chemotherapy infusion facility are fairly nominal—consisting primarily of an office, comfortable chairs or beds, and infusion pumps. However, the chemotherapy drugs themselves are expensive and the related profit margins are generally low due to downward pressure on reimbursement rates in recent years. Although the chemotherapy sector continues to grow (and is estimated to represent approximately $9-$11 billion a year in expenditures serviced by 700 to 1,000 infusion pharmacies), declining reimbursement rates and high drug costs will put significant pressure on the cash flows and values of these businesses.

Given the significant number of cancer patients over the age of 65, Medicare’s continued focus on reducing costs will be a significant factor for medical oncologists going forward. During a recent ASCO conference, it was estimated that by 2030 the incidence of cancer in the U.S. will rise to 67% in people over 65 compared with just 11% for younger people. Coupled with skyrocketing cancer drug prices, decreasing reimbursement rates for chemotherapy services have influenced many medical oncologists to sell or merge with other providers in an effort to reduce operating costs and improve efficiencies. Of the 12 cancer drugs approved by the FDA in 2012, 11 were priced above $100,000 for a year of treatment. Writing in an op-ed in the New York Times in October 2012, three physicians at New York City’s Memorial Sloan-Kettering Cancer Center noted that “the typical new cancer drug coming on the market a decade ago cost $4,500 per month (in 2012 dollars); since 2010 the median price has been around $10,000.”

For many oncology practices, the ability to provide quality care while maintaining a reasonable operating margin has simply become unsustainable.

340B Drug Pricing Program. Another factor impacting medical oncology consolidation is the existence of the U.S. 340B Drug Pricing Program (340B program). In consideration of high drug costs, Congress created the program to reduce outpatient drug costs for certain types of healthcare facilities serving large numbers of uninsured indigent patients. The law requires pharmaceutical manufacturers to give statutorily specified discounts for drugs dispensed to outpatients of qualified entities. Today, about one-third of all U.S. hospitals participate in the 340B program. Overall in the past ten years, the number of covered entity sites that participate has nearly doubled, from 8,605 to 16,572 in 2011, and rapid growth is expected to continue in future years. For example, the Berkley Research Group estimates 340B program drug purchases will double from $6 billion annually in 2012 to $12 billion by 2016. The presence of the 340B program is a significant driver in medical oncology transactions especially given the savings that result when drugs are purchased under this program as opposed to by a private medical oncology practice.

Even private practices or businesses with large purchasing power are unable to obtain the savings available under the 340B program. For example, Avalere Health performed an analysis that estimates covered entities receive annual discounts of $2 billion on brand name drugs alone. The most common medical oncology transaction today consists of one whereby a private medical oncology practice experiencing declining drug margins is acquired by a hospital that participates in the 340B program. Typically, the physicians are subsequently employed by the hospital or otherwise contractually obligated to continue providing professional services to the hospital’s patients. In addition to favorable drug pricing, the benefit to the hospital is that it gains access to a “new” patient base that was previously treated in private medical oncology practices. The physicians benefit by eliminating their risk associated with rising drug costs and declining operating margins.

Radiation Oncology

Approximately 70% of all cancer patients undergo some type of radiation therapy, which is generally delivered in an outpatient setting furnished with very expensive equipment. Depending on the type of cancer and circumstances, several different types of radiation therapy treatment options may be appropriate. They include the following:

External Beam Radiation. External beam radiation is the most widely used type of radiation therapy. The radiation is dispersed externally from a linear accelerator or “linac” to the appropriate area of the body. The linac is generally used in conjunction with complex computer programs and imaging equipment to plan and deliver the appropriate treatment. It is important to understand, especially from a valuation standpoint, the various types of external beam radiation therapy as they can produce substantially different levels of revenue from approximately the same capital investment. Such therapy includes three-dimensional conformal radiation therapy (3D-CRT), intensity modulated radiation therapy (IMRT), and image-guided radiation therapy (IGRT). IMRT is a specialized form of 3D-CRT whereby the linac is able to “shape” the radiation to more exactly conform to the tumor. IGRT includes the use of imaging via CT, ultrasound, or
X-ray to guide the delivery of radiation therapy. The appropriate type of external beam radiation treatment will depend on the type of cancer and patient circumstances. For example, IMRT is commonly used to treat prostate cancer.

**Internal Radiation.** Internal radiation (brachytherapy) is another form of radiation therapy. This method involves inserting radioactive material into the tumors or into a body cavity close to the tumor. The advantage is the ability to deliver a high dose of radiation directly to the tumor. The equipment used to deliver brachytherapy includes a source holding and delivery unit, which contains the radioactive material and loads it via catheters or needles into the treatment site.

**Key Radiation Oncology Issues.** The following key issues should be considered when attempting to value a radiation oncology business:

1. **Capital Requirements.** The initial capital required for facilities, equipment, and other resources needed to provide radiation oncology services is significant. Depending on the features, linac and CT machines typically cost well over $1 million each. Additionally, these costly machines require periodic upgrades and generally must be replaced after approximately ten to 12 years of use. It would not be unusual to spend $5 million to $6 million to completely outfit a radiation therapy department with one linear accelerator capable of IGRT services. However, a robust radiation oncology program operating at optimal capacity can recoup the significant capital investments and generate substantial profits over time. According to a recent report released by MarketsandMarkets, Inc., the radiotherapy equipment market is expected to experience significant growth over the next five to seven years with revenues topping $5 billion. External beam radiation will continue to represent a large portion of the radiation therapy market, fueled by an ever-increasing patient pool eligible for these services. In the global market, linear accelerator devices represent the largest share of the market with $2.8 billion in 2011. MarketsandMarkets reported this figure is expected to reach $3.7 billion by 2016.19

2. **Emerging Technologies.** A discussion of radiation therapy would not be complete without the mention of emerging technologies, specifically that of proton therapy. This fairly new and expensive treatment option has started to have an effect on the market. The unique therapy uses atomic particles to more precisely target cancer tumors. However, it requires a particle accelerator roughly the size of a football field that can cost as much as a football stadium (i.e. well over $100 million). Medicare currently pays over $32,000 per patient for proton therapy, compared to $15,230 for radiation therapy with IMRT.20 There are ten proton accelerators now operating in the U.S. with nine more under development.21 Several companies are attempting to develop and commercialize a less expensive next generation proton machine. For example, ProNova Solutions is developing a machine anticipated to reduce the cost by approximately one-half and require less than half the time to implement.22

3. **Certificate of Need (CON) Laws.** Another nuance associated with valuing radiation therapy businesses is certificate of need or CON laws which are intended to curb unnecessary competition among healthcare providers. While the federal law requiring states to develop health planning agencies and establish CON programs was enacted in 1974 and subsequently repealed in 1986, multiple states still have such laws in existence which can limit the development of new radiation oncology facilities.23 A key purpose of CON programs is coordinated planning of new healthcare facilities and services based on the size and needs of the community.24 Given that CON laws essentially protect current providers from unnecessary competition, the CON itself may be ascribed value under certain circumstances.

4. **Physician Relationships.** Radiation oncologists typically obtain patients from other referring physicians, such as medical oncologists. Therefore, a firm understanding of these referral relationships is critical for analyzing the business and estimating future revenue. Depending on the circumstances, such as facilities and depth of cancer treatment options in the community, it is not uncommon for radiation oncologists to be the second or third physician “in line” to see a patient diagnosed with cancer. Primary care physicians often identify cancer via diagnostic testing and then refer their patients to a medical oncologist or surgeon for additional testing and treatment options. Accordingly, radiation oncologists are often highly dependent on medical oncologists and surgeons for their patient referrals. In communities with large, well-marketed, and publicized cancer programs, patients may also self-refer to a particular cancer center based on its reputation in the market.

**Reimbursement Methods**

Another critical factor to consider when valuing an oncology business is the multiple forms of payment (i.e. reimbursement) that it receives for the services provided. The reimbursement amounts and methodology can vary substantially based on how it is structured and owned (i.e., private physician practice, hospital outpatient department, freestanding cancer center, etc.). Reimbursement also greatly depends on who is actually paying for the oncology service (e.g. Medicare, commercial
insurance companies pay based on contractual rates that have been negotiated for the types of services provided. However, Medicare reimburses based on the “Medicare Physician Fee Schedule” for medical services provided in a private physician practice or freestanding cancer center setting, and according to the “Outpatient Prospective Payment System” for services provided by a hospital outpatient department. These two reimbursement methodologies for Medicare patients, which typically represent a high percentage of the oncology patient base, are summarized below.

Medicare Physician Fee Schedule. Physician and other non-hospital (or non-facility) based services are reimbursed by the Centers for Medicare & Medicaid Services (CMS) under the Medicare Physician Fee Schedule (MPFS) and funded by Medicare Part B. Services are defined by Current Procedural Terminology (CPT) codes with each code consisting of three resource cost elements associated with physician work, practice expenses, and professional liability insurance. Under the MPFS, each of these three elements is assigned a Relative Value Unit (RVU) which is then geographically adjusted and multiplied by a conversion factor to determine the allowed payment amount for a particular service. The MPFS is updated annually and available for free via CMS’ website.25

Outpatient Prospective Payment System. Designated hospital outpatient services, including infusion and radiation therapy services, are reimbursed by CMS under the Outpatient Prospective Payment System (OPPS). The payment rates for most separately payable medical and surgical services are determined by multiplying the established scaled relative weight for the service’s clinical Ambulatory Payment Classification (APC) by a conversion factor to arrive at a national unadjusted payment rate for the APC. The CF is updated annually by the Outpatient Department Fee Schedule (OPD FS) increase factor unless Congress stipulates otherwise. The OPD FS is then calculated by reducing the hospital market basket update by a multifactor productivity adjustment and an additional 0.3% required by the Affordable Care Act, which resulted in an OPD FS increase factor of 1.7% for 2013.26 Hospitals may either bill outpatient services as a “department” of the hospital or as a “provider-based” entity. While there are specific definitions and requirements associated with billing hospital services as provider-based, it is critical to differentiate between the two for purposes of this discussion. Under provider-based billing, Medicare requires the healthcare provider to bill both a facility fee (under Part A) and the healthcare provider fee (under Part B). As hospitals consider and enter into arrangements with physicians, the advantage to “provider-based” billing is that hospitals not only obtain reimbursement for the professional services provided, but also additional revenue for the facility piece that is not available under the MPFS. Such revenue may then be used to offset or subsidize non-revenue generating activities typically associated with the provision of cancer services or allow hospitals to continue to meet their missions by providing indigent care.

Reimbursement Trends
A solid understanding of reimbursement trends by type of applicable service is an important consideration when attempting to value any types of healthcare businesses. Historical Medicare reimbursement rate data is readily available for benchmarking purposes. Additionally, CMS’ annual MEDPAC report and updates to the MPFS and OPPS provide valuable insights into anticipated future reimbursement rates. CMS published the most recent MPFS final rule and the OPPS final rule in the Federal Register on 11/27/2013.

The recent MPFS final rule results in a net 2% reduction in Medicare payments to physicians involved in hematology/oncology services, a 1% increase for radiation oncology, and a 1% reduction for radiation therapy centers; whereas the OPPS final rule increased payments for several radiation therapy modalities including 3D-CRT, IMRT, and IGRT.

The Valuation Process
As outlined below, there are three generally accepted and well-established approaches for valuing businesses, business interests, and related assets. Additionally, each valuation approach includes multiple methodologies whose appropriateness depends on the particular facts and circumstances. Accordingly, a solid understanding of the oncology business and transaction terms is critically important for purposes of selecting and applying the most appropriate valuation methods. The three valuation approaches are defined as follows:27 Market Approach. The market approach is a “general way of determining a value indication of a business, business ownership interest, security or intangible asset by using one or more methods that compare the subject to similar businesses, business ownership interests, securities or intangible assets that have been sold.”

Cost Approach. The cost approach is a “general way of determining a value indication of an individual asset by quantifying the amount of money required to replace the future service capability of that asset.”

Income Approach. The income approach is a “general way of determining a value indication of a business, business ownership interest, security or intangible asset using one or
more methods that convert anticipated economic benefits into a present single amount."

Under the standard of fair market value, which is generally applicable for most oncology business transactions, all appropriate valuation methodologies should be used and the related indications of value reconciled for purposes of determining the ultimate conclusion of value. Specific considerations for analyzing and valuing medical and radiation oncology businesses are outlined in additional detail below.

**Valuing Medical Oncology Businesses**

Physicians (i.e. medical oncologists) and oncology drugs (e.g. chemotherapy) are the primary revenue generators in medical oncology practices. However, the high cost of oncology drugs and physician compensation expense, which is highly correlated with professional revenue produced, normally results in minimal, if any, net profit from these services. Accordingly, the income approach is often difficult to use with medical oncology practices due to insufficient net cash flow.

Use of the market approach is also challenging due to a lack of reliable transaction data involving similar entities. Specific details for most healthcare transactions, especially physician practice acquisitions, are generally unavailable to the public. Additionally, even available physician practice transaction data is often not usable due to significant differences between the entities or market conditions. Important factors to consider when evaluating market transaction data related to medical oncology practices include a comparison of the physicians’ ages and productivity levels, service mix, payer mix, reimbursement rates, and the level of competition in the local market.

Without sufficient cash flow or reliable transaction data needed to use the income or market approaches, respectively, the cost approach is often the default for medical oncology practices. The most commonly used cost approach methodology is the net asset value (NAV) method, which is based on the entity’s underlying assets and liabilities. The NAV method provides an indication of value by subtracting the entity’s liabilities from its assets after adjusting both to their respective fair market values. As is often the case, adjusting the assets and liabilities to their fair market values is often more challenging than first thought. For example, many small medical oncology practices use the cash method of accounting and omit significant assets and liabilities from their balance sheets, such as accounts receivable, drug and medical supplies inventories, and accounts payable.

After identifying the omitted assets and liabilities, significant analysis is often required to estimate their respective fair market values. For example, accounts receivable reports for most physician practices generally include a combination of gross charges (i.e., before contractual adjustments) and net receivables (i.e., after contractual adjustments), making it even more challenging to estimate their fair market value. Drug and supply inventories are commonly expensed when paid for, as opposed to being capitalized as an asset and expensed when used. Accounts receivable and drug inventories are typically material assets of medical oncology practices.

**Valuing Radiation Oncology Businesses**

Radiation oncology businesses typically generate the majority of their revenue from technical radiation therapy services administered via medical equipment, such as linear accelerators, that are operated by technicians as opposed to physicians. The expensive equipment and facilities needed to provide radiation therapy services normally results in a significant percentage of operating costs being fixed or semi-fixed in nature; accordingly, profitability is highly dependent on the volume of services provided. An income approach methodology, such as the discounted cash flow (DCF) method, is commonly used when valuing radiation oncology businesses unless patient volumes are insufficient to be profitable. However, projecting cash flows can be particularly challenging for these types of businesses.

For example, radiation therapy revenues are substantially influenced by multiple factors such as the service mix, payer mix, reimbursement rates, competition, changing technologies, and relationships with key referral sources, such as medical oncologists. The service mix alone can have a substantial effect on revenues due to the drastic difference in reimbursement rates by type of service. As an example, the 2013 MPFS paid between $127 and $260 per 3D-CRT treatment as compared to approximately $405 for IMRT treatments. Although IMRT services generate significantly more revenue, this type of treatment is not always medically necessary for all types of cancer.

The market approach is used more often for radiation as opposed to medical oncology businesses due to better transaction data and the fact that several publicly traded companies provide radiation therapy services, such as Radiation Therapy Services, Inc. However, caution should be exercised when attempting to use market transaction data, especially if the subject entity is relatively small. The market data factors discussed above related to medical oncology practices would primarily apply to radiation oncology businesses as well. Additionally, some states require a CON to operate certain radiation therapy equipment; whereas
other states do not. Because a CON can have a material effect on competition, market transaction data related to a radiation therapy business operating in a CON state may not be appropriate for a business operating in a non-CON state. The cost approach/NAV method is generally used for radiation oncology businesses with insufficient patient volumes to produce positive net cash flow. In addition to similar asset and liability issues as those previously discussed regarding medical oncology practices, radiation oncology businesses have more significant investments in tangible fixed assets and oftentimes more intangible assets. The highly specialized equipment and facilities needed for radiation therapy treatments is very expensive, typically running into the millions of dollars; therefore, an accurate inventory and appraisal of these assets is critical when using the NAV method. Additionally, intangible assets, such as CONs, are more commonly found in radiation oncology businesses, and would need to be valued.

Conclusion

Cancer is a terrible disease that negatively affects a large number of individuals and families every year. While treatment options and survival rates are improving, the demand for oncology services will likely continue to grow along with the aging U.S. population. The demand for valuation services from individuals who understand these complex businesses should also continue to increase, particularly because a large percentage of healthcare costs are paid for by the U.S. government (e.g., by Medicare), and regulatory restrictions require most transactions between healthcare providers to be consummated at fair market value.

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1 Available at: http://www.cancer.org/research/cancerfactsfigures/cancerfactsfigures/cancerfactsfigures-2013.
5 Note 3, supra.
7 42 U.S.C. section 1320a-7b(b).
9 Reg. 52.4958-4(b)(1)(i).
11 http://jco.ascopubs.org/content/20/23/4503.
15 http://www.hrsa.gov/opa/. 
17 Id.
19 Id.
25 http://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/PhysicianFeeSched/index.html.
27 Valuation approach definitions are taken from the International Glossary of Business Valuation Terms, as referenced in the Statement on Standards for Valuation Services No. 1, Appendix B, promulgated by the AICPA.