

HEALTHCARE REALTY TRUST INC

Form 424B5

June 30, 2016

Table of Contents

Filed Pursuant to Rule 424(b)(5)
Registration File No. 333-194037

Calculation of Registration Fee

| Title of each class of securities to be registered | Proposed amount to be offered | Proposed maximum offering price per unit(1) | Proposed aggregate maximum offering price(1) | Amount of registration fee(1) |
|---|--------------------------------------|--|---|--------------------------------------|
| Common Stock (\$.01 par value per share) | 9,200,000 | \$33.44 | \$307,648,000 | \$30,981 |

- (1) Estimated solely for the purpose of computing the amount of the registration fee pursuant to Rule 457(c) under the Securities Act of 1933, as amended (the "Securities Act"), based on the average of the high and low prices on June 23, 2016. Payment of the registration fee at the time of filing of the registrant's registration statement on Form S-3, filed with the Securities and Exchange Commission on February 19, 2014 (File No. 333-194037) (the "Registration Statement"), was deferred pursuant to Rules 456(b) and 457(r) under the Securities Act. The information in this "Calculation of Registration Fee" table (including the footnotes hereto) shall be deemed to update the "Calculation of Registration Fee" table in the Registration Statement.

Table of Contents

Prospectus Supplement

(To prospectus dated February 19, 2014)

Healthcare Realty Trust Incorporated

8,000,000 Shares of Common Stock

Healthcare Realty Trust Incorporated ("HR" or the "Company") is offering 8,000,000 shares of its common stock, par value \$0.01 per share, to be sold pursuant to this prospectus supplement and the accompanying prospectus. The Company's common stock trades on the New York Stock Exchange (NYSE) under the symbol "HR". On June 28, 2016, the last reported sales price of the Company's shares as reported on the NYSE was \$34.94 per share.

The underwriters have severally agreed to purchase the shares of the common stock from the Company at a price of \$33.13 per share, which will result in approximately \$264.8 million in net proceeds to the Company after deducting estimated offering expenses. The underwriters may offer our common stock from time to time for sale in negotiated transactions or otherwise, at market prices prevailing at the time of sale, at prices related to such prevailing market prices or at negotiated prices. See "Underwriting."

The underwriters have an option to purchase, within 30 days from the date of this prospectus supplement, a maximum of 1,200,000 additional shares at a price of \$33.13. If such option is exercised in full, the net proceeds to the Company after deducting estimated offering expenses will be \$304.6 million. Delivery of the shares of common stock will be made on or about July 5, 2016.

Investing in the Company's common stock involves risks and uncertainties. You should carefully read and consider the Supplemental Risk Factors and Forward-Looking Statements beginning on pages S-5 and S-6, respectively, of this prospectus supplement, the Special Note Regarding Forward-Looking Statements and Risk Factors beginning on pages 3 and 5, respectively, of the accompanying prospectus and the Risk Factors in the Company's Annual Report on Form 10-K for the year ended December 31, 2015, which is incorporated herein by reference.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or determined if this prospectus supplement or the accompanying prospectus is truthful or complete. Any representation to the contrary is a criminal offense.

Wells Fargo Securities

The date of this prospectus supplement is June 28, 2016.

J.P. Morgan

Table of Contents

Table of Contents

PROSPECTUS SUPPLEMENT

| | |
|--|------|
| <u>About this Prospectus Supplement</u> | S-1 |
| <u>Summary</u> | S-2 |
| <u>Supplemental Risk Factors</u> | S-5 |
| <u>Forward-Looking Statements</u> | S-6 |
| <u>Use of Proceeds</u> | S-8 |
| <u>Supplemental U.S. Federal Income Tax Considerations</u> | S-9 |
| <u>Underwriting (Conflicts of Interest)</u> | S-10 |
| <u>Legal Matters</u> | S-15 |
| <u>Experts</u> | S-16 |
| <u>Where You Can Find More Information</u> | S-16 |
| <u>Incorporation of Certain Information by Reference</u> | S-16 |
| PROSPECTUS | |

| | |
|--|----|
| <u>About This Prospectus</u> | 3 |
| <u>Special Note Regarding Forward-Looking Statements</u> | 3 |
| <u>Risk Factors</u> | 5 |
| <u>The Company</u> | 5 |
| <u>Selling Stockholders</u> | 5 |
| <u>Use of Proceeds</u> | 6 |
| <u>Ratio of Earnings to Combined Fixed Charges and Preferred Stock Dividends</u> | 6 |
| <u>General Description of Securities the Company May Sell</u> | 6 |
| <u>Description of Common Stock</u> | 7 |
| <u>Description of Common Stock Warrants</u> | 9 |
| <u>Description of Preferred Stock</u> | 10 |
| <u>Description of Debt Securities</u> | 14 |
| <u>U.S. Federal Income Tax Considerations</u> | 20 |
| <u>Plan of Distribution</u> | 30 |
| <u>Legal Matters</u> | 31 |
| <u>Experts</u> | 31 |
| <u>Where You Can Find More Information</u> | 31 |
| <u>Incorporation of Certain Documents by Reference</u> | 32 |

Table of Contents

About this Prospectus Supplement

This document is in two parts. The first part is this prospectus supplement, which describes the specific terms of this offering and also adds to and updates information contained in the accompanying prospectus and the documents incorporated by reference into this prospectus supplement. The second part is the accompanying prospectus, which gives more general information about us and the securities we may offer, some of which may not apply to this offering. To the extent the information contained in this prospectus supplement differs or varies from the information contained in the accompanying prospectus or any document incorporated by reference herein or therein, the information in this prospectus supplement shall control.

Neither the Company nor the underwriters have authorized anyone to provide you with information different from that contained in or incorporated by reference into this prospectus supplement, the accompanying prospectus and any free writing prospectus the Company authorizes to be delivered to you. The Company takes no responsibility for, and can provide no assurance as to the reliability of, any other information that others may give you. You should not assume that the information contained in this prospectus supplement, the accompanying prospectus or any free writing prospectus is accurate as of any date other than the date of this prospectus supplement, the accompanying prospectus or any free writing prospectus, respectively, or that information contained in any document incorporated or deemed to be incorporated by reference is accurate as of any date other than the date of that document. The Company's business, financial conditions, prospects and results of operations may have changed since those respective dates.

The distribution of this prospectus supplement and the accompanying prospectus in some jurisdictions may be restricted by law. The Company and the underwriters are offering to sell, and seeking offers to buy, shares only in jurisdictions where offers and sales are permitted. Persons who receive this prospectus supplement and the accompanying prospectus should inform themselves about and observe any such restrictions. This prospectus supplement and the accompanying prospectus do not constitute, and may not be used in connection with, an offer or solicitation by anyone in any jurisdiction in which such offer or solicitation is not authorized or in which the person making such offer or solicitation is not authorized or in which the person making such offer or solicitation is not qualified to do so or to any person to whom it is unlawful to make such offer or solicitation.

Table of Contents

Summary

The information below is a summary of the more detailed information included elsewhere or incorporated by reference in this prospectus supplement and the accompanying prospectus. You should read carefully the following summary together with the more detailed information contained in this prospectus supplement, the accompanying prospectus, and the information incorporated by reference into those documents, including the Supplemental Risk Factors and Forward-Looking Statements sections beginning on pages S-5 and S-6, respectively, of this prospectus supplement, the Special Note Regarding Forward-Looking Statements and Risk Factors sections beginning on page 3 and 5, respectively, of the accompanying prospectus, and the Risk Factors section in the Company's Annual Report on Form 10-K for the year ended December 31, 2015. This summary is not complete and does not contain all of the information you should consider when making your investment decision.

Unless the context otherwise requires, as used in this prospectus supplement and the accompanying prospectus, the terms HR and the Company include Healthcare Realty Trust Incorporated, its subsidiaries and other entities in which Healthcare Realty Trust Incorporated or its subsidiaries own an interest.

Additionally, unless otherwise expressly stated or the context otherwise requires, information in this prospectus supplement assumes that the option granted to the underwriters to purchase up to 1,200,000 additional shares from the Company has not been exercised.

About the Company

Healthcare Realty Trust Incorporated is a self-managed and self-administered real estate investment trust, or REIT, that owns, acquires, manages, finances and develops income-producing real estate properties associated primarily with the delivery of outpatient healthcare services throughout the United States. The Company was incorporated in Maryland in 1992 and listed on the New York Stock Exchange in 1993.

The Company operates so as to qualify as a REIT for federal income tax purposes. As a REIT, the Company is not subject to corporate federal income tax with respect to taxable income distributed to its stockholders.

Business Strategy

The Company owns and operates healthcare properties that facilitate the delivery of care in primarily outpatient settings. The Company seeks to generate stable, growing income and lower the long-term risk profile of its portfolio of properties by focusing on facilities located on or near the campuses of large, acute care hospitals associated with leading health systems. The Company seeks to reduce financial and operational risk by owning properties in diverse geographic locations with a broad tenant mix that includes over 30 physician specialties, as well as surgery, imaging, cancer and diagnostic centers. To execute its strategy, the Company integrates owning, managing, financing and developing such properties and provides a broad spectrum of real estate services including leasing, property management, acquisition and development.

Portfolio

As of March 31, 2016, the Company had investments of approximately \$3.4 billion in 199 real estate properties located in 30 states totaling approximately 14.3 million square feet. The Company provided property management services to approximately 9.9 million square feet nationwide as of March 31, 2016.

S-2

Table of Contents

Recent Developments

Acquisition and Development Environment

In April 2016, the Company acquired a 46,637 square foot medical office building in Seattle, Washington for a purchase price of \$21.6 million. The property is located on the campus of UW Medicine's Valley Medical Center, a 321 bed medical and surgical hospital. In May 2016, the Company acquired a 63,012 square foot medical office building in Los Angeles, California for a purchase price of \$19.8 million, including \$13.2 million in assumed mortgage debt. This property is on the campus of HCA's West Hills Hospital and Medical Center, a 225 bed medical and surgical hospital.

Management believes that there is a favorable environment for the acquisition and development of on-campus, multi-tenant medical office facilities with market leading hospitals that meet our investment criteria. The Company anticipates completing acquisitions of \$150 million or more over the course of the next 12 months at an average first year cash capitalization rate of 5.5% to 5.75%, in major metropolitan markets in which we have been expanding our presence, including Seattle, Los Angeles, and Washington D.C./Baltimore. The Company also expects to invest \$85 million in medical office development and re-development projects over the next 12 months, at targeted stabilized yields ranging from 6.75% to 8.5%. Four such projects are currently underway in Austin, Birmingham, Denver, and Nashville with leases in place of 79% of square footage and approximately \$50 million remaining to spend. The Company anticipates starting two additional projects in the Seattle area with total budgets of \$70 million, expected pre-leasing of more than 50% of square footage, with \$35 million estimated to be spent over the next 12 months. The acquisition and development of these properties is expected to enhance our internal growth prospects. The acquisitions and the Seattle development projects described in this paragraph are subject to execution of definitive agreements, customary due diligence and other customary conditions. There can be no assurance that we will acquire any of these properties or complete the development of these projects.

At-The-Market Equity Offering Program

On February 19, 2016, the Company entered into sales agreements with five investment banks to allow sales under its at-the-market equity offering program of up to 10,000,000 shares of common stock. As of April 29, 2016, the Company had 7,683,051 shares remaining available to be sold under the sales agreements. Since April 29, 2016, the Company sold 1,814,354 shares of common stock, generating \$57.9 million in net proceeds at prices ranging from \$30.42 to \$33.66 per share (weighted average of \$32.39 per share). The Company has 5,868,697 authorized shares remaining available to be sold under the current sales agreements as of the date of this prospectus supplement.

Principal Executive Offices

The principal executive offices of Healthcare Realty Trust Incorporated are located at 3310 West End Avenue, Suite 700, Nashville, Tennessee 37203. The telephone number of the executive offices is (615) 269-8175.

Table of Contents

The Offering

| | |
|---|---|
| Issuer | Healthcare Realty Trust Incorporated |
| Common Stock Offered | 8,000,000 shares |
| Common Stock Outstanding after the Offering | 114,651,423 shares(1) |
| Use of Proceeds | The Company will use the net proceeds from this offering for general corporate purposes, including the acquisition and development of healthcare facilities. See Summary Recent Developments above and Use of Proceeds below. |
| Conflicts of Interest | The underwriters and their respective affiliates have engaged in, and may in the future engage in, investment banking, commercial banking and other commercial dealings in the ordinary course of business with the Company and its affiliates, for which they have received and may in the future receive customary fees and commissions. Affiliates of the underwriters act as lenders and/or agents under the Company's unsecured revolving credit facility and unsecured term loan and may receive a portion of the proceeds from this offering. For additional information, see Underwriting Conflicts of Interest . |
| Dividends | The Company is currently paying dividends of \$0.30 per quarter, or \$1.20 per year, per share of common stock. |
| NYSE Symbol | HR |
| Risk Factors | An investment in our common stock involves various risks and uncertainties. For information on the risks and uncertainties, see Supplemental Risk Factors and Forward-Looking Statements . |
| Restrictions on Ownership | Our common stock is subject to certain ownership and transfer restrictions in connection with our qualification as a REIT. For additional information, see Description of Common Stock Restrictions on Transfer in the accompanying prospectus. |

Transfer Agent

Wells Fargo, N.A., Shareowner Services is the transfer agent and registrar for the common stock.

(1) The number of shares of the Company's common stock outstanding after this offering is based on shares outstanding as of June 23, 2016, and excludes, as of June 23, 2016, 3,038,906 shares of common stock reserved for issuance under the Company's 2015 Stock Incentive Plan, 448,993 shares of common stock reserved for issuance under the Company's Dividend Reinvestment Plan, and 53,702 shares of common stock reserved for issuance under the Company's 2000 Employee Stock Purchase Plan. This number also does not include 1,200,000 shares of common stock reserved for issuance in connection with the underwriters' option to purchase additional shares. Unless specifically stated otherwise, the information in this prospectus supplement assumes that the underwriters do not exercise their option to purchase additional shares of the Company's common stock.

S-4

Table of Contents

Supplemental Risk Factors

Investing in the Company's common stock involves risks. Before making an investment in the Company's common stock, you should carefully consider, among other factors, the risks described below and elsewhere in this prospectus supplement, the accompanying prospectus and the documents incorporated by reference. Please see

Forward-Looking Statements beginning on page S-6 of this prospectus supplement. Please also see *Special Note Regarding Forward-Looking Statements* and *Risk Factors* beginning on pages 3 and 5, respectively, of the accompanying prospectus and the risks described in the documents incorporated by reference, including those identified under *Risk Factors* in the Company's Annual Report on Form 10-K for the year ended December 31, 2015 and in the Company's other filings with the Securities and Exchange Commission (SEC). The risks described in this prospectus supplement and the accompanying prospectus are not the only ones faced by the Company. Additional risks not presently known or that the Company currently deems immaterial could also materially and adversely affect the Company's financial condition, results of operations, business and prospects. You should consult your own financial and legal advisors as to the risks entailed by an investment in these shares and the suitability of investing in such shares in light of your particular circumstances. The Company's business, financial condition and results of operations could be materially adversely affected by the materialization of any of these risks. The trading price of the Company's common stock could decline due to the materialization of any of these risks, and you may lose all or part of your investment.

The Company may be unable to complete anticipated acquisitions or to successfully complete anticipated development projects on time, at currently anticipated prices or targeted stabilized yields, or at all.

The Company may be unable to complete the anticipated acquisitions or to successfully complete the development projects described above under *Summary Recent Developments Acquisition and Development Environment* on page S-3 on time, or at currently anticipated costs, targeted capitalization rates, or targeted stabilized yields, or at all, which may have a material adverse effect on the Company's results of operations, financial condition and the trading price of the Company's common stock.

This offering may be dilutive, and there may be future dilution of the Company's common stock.

Giving effect to the potential issuance of common stock in this offering, the receipt of the expected net proceeds and the use of those proceeds, this offering may have a dilutive effect on the Company's expected earnings per share and funds from operations per share. The actual amount of such dilution cannot be determined at this time and will be based on numerous factors. Additionally, subject to the 45-day lock-up restrictions described in *Underwriting*, the Company is not restricted from issuing additional shares of its common stock or preferred stock, including any securities that are convertible into or exchangeable for, or that represent the right to receive, common stock or preferred stock or any substantially similar securities in the future. The market price of the Company's common stock could decline as a result of sales of a large number of shares of its common stock in the market after this offering or the perception that such sales could occur.

Table of Contents

Forward-Looking Statements

This prospectus supplement, the accompanying prospectus and other materials the Company has filed or may file with the SEC, as well as information included in oral statements or other written statements made, or to be made, by senior management of the Company, contain, or will contain, disclosures which are forward-looking statements.

Forward-looking statements include all statements that do not relate solely to historical or current facts and can be identified by the use of words such as may, will, expect, believe, anticipate, target, intend, plan, estimate, continue, should, could and other comparable terms. These forward-looking statements are based on the current plans and expectations of management and are subject to a number of risks and uncertainties that could significantly affect the Company's current plans and expectations and future financial condition and results. Such risks and uncertainties include, among other things, the following:

The Company's expected results may not be achieved;

The Company's long-term single-tenant net leases may not be extended;

The Company's revenues depend on the ability of its tenants to generate sufficient income from their operations to make rent, loan and lease guaranty payments to the Company;

The Company may decide or may be required under purchase options to sell certain properties. The Company may not be able to reinvest the proceeds from sale at rates of return equal to the return received on the properties sold;

Owning real estate and indirect interests in real estate is subject to inherent risks;

The Company may incur impairment charges on its real estate properties or other assets;

If the Company is unable to promptly re-let its properties, if the rates upon such re-letting are significantly lower than the previous rates or if the Company is required to undertake significant expenditures to attract new tenants, then the Company's business, financial condition and results of operations would be adversely affected;

Certain of the Company's properties are special purpose healthcare facilities and may not be easily adaptable to other uses;

The Company has, and may have more in the future, exposure to fixed rent escalators, which could impact its growth and profitability;

The Company's real estate investments are illiquid and the Company may not be able to sell properties strategically targeted for disposition;

The Company is subject to risks associated with the development and redevelopment of properties;

The Company may make material acquisitions and undertake developments that may involve the expenditure of significant funds and may not perform in accordance with management's expectations;

The Company is exposed to risks associated with entering new geographic markets;

Many of the Company's properties are held under ground leases. These ground leases contain provisions that may limit the Company's ability to lease, sell, or finance these properties;

The Company may experience uninsured or underinsured losses related to casualty or liability;

The Company is subject to cyber security risks;

The Company has incurred significant debt obligations and may incur additional debt and increase leverage in the future;

Covenants in the Company's debt instruments limit its operational flexibility, and a breach of these covenants could materially affect the Company's financial condition and results of operations;

Table of Contents

A change to the Company's current dividend payment may have an adverse effect on the market price of the Company's common stock;

If lenders under the Company's unsecured credit facility fail to meet their funding commitments, the Company's operations and consolidated financial position would be negatively impacted;

The unavailability of equity and debt capital, volatility in the credit markets, increases in interest rates, or changes in the Company's debt ratings could have an adverse effect on the Company's ability to meet its debt payments, make dividend payments to stockholders or engage in acquisition and development activity;

The Company is exposed to increases in interest rates, which could adversely impact its ability to refinance existing debt, sell assets or engage in acquisition and development activity;

The Company may enter into interest rate swap agreements from time to time that may not effectively reduce its exposure to changes in interest rates;

If a healthcare tenant loses its licensure or certification, becomes unable to provide healthcare services, cannot meet its financial obligations to the Company or otherwise vacates a facility, the Company would have to obtain another tenant for the affected facility;

Adverse trends in the healthcare service industry may negatively affect the Company's lease revenues and the value of its investments;

If the Company fails to remain qualified as a REIT, the Company will be subject to significant adverse consequences, including adversely affecting the value of its common stock;

The Company's Articles of Incorporation contain limits and restrictions on transferability of the Company's common stock which may have adverse effects on the value of the Company's common stock;

Dividends payable by REITs do not qualify for the reduced tax rates available for some dividends;

Complying with the REIT requirements may cause the Company to forego otherwise attractive opportunities;

Qualifying as a REIT involves highly technical and complex provisions of the Internal Revenue Code of 1986, as amended; and

New legislation or administrative or judicial action, in each instance potentially with retroactive effect, could make it more difficult or impossible for the Company to qualify as a REIT.

Other risks, uncertainties and factors that could cause actual results to differ materially from those projected are detailed from time to time in reports filed by the Company with the SEC, including Forms 8-K, 10-Q and 10-K (including those identified in the Company's Annual Report on Form 10-K for the year ended December 31, 2015).

The Company undertakes no obligation to publicly update or revise any forward-looking statements, whether as a result of new information, future events or otherwise. Investors are cautioned not to unduly rely on such forward-looking statements when evaluating the information presented in this prospectus supplement and the accompanying prospectus or the Company's filings and reports.

S-7

Table of Contents

Use of Proceeds

The net proceeds from this offering will be approximately \$264.8 million after deducting underwriting discounts and commissions and estimated offering expenses. The Company will use the net proceeds from this offering for general corporate purposes, including the acquisition and development of healthcare facilities. Pending such investments, the Company will apply the net proceeds to outstanding indebtedness under its unsecured credit facility due April 2017 (the Credit Facility), its Unsecured Term Loan due 2019 (the Term Loan) and a mortgage note payable in the amount of \$16 million, and/or place the net proceeds in interest-bearing bank accounts or in readily marketable, interest-bearing securities. There was \$196 million outstanding under the Credit Facility and \$200 million outstanding under the Term Loan as of June 23, 2016.

The balance on the Credit Facility fluctuates routinely in the ordinary course of the Company's business. Loans outstanding under the Credit Facility (other than swing line loans and competitive bid advances) bear interest at a rate equal to LIBOR plus a margin ranging from 0.95% to 1.75% (1.15% as of June 23, 2016) based on the Company's unsecured debt ratings. In addition, the Company pays a facility fee per annum on the aggregate amount of commitments that ranges from 0.15% to 0.35% (0.20% as of June 23, 2016) based on the Company's unsecured debt ratings.

The Term Loan bears interest at a rate equal to (x) LIBOR plus (y) a margin ranging from 1.00% to 1.95% (1.20% as of June 23, 2016) based upon the Company's unsecured debt rating.

The mortgage note payable matures on December 1, 2016, bears interest at a rate of 6.01% and may be prepaid without penalty after September 1, 2016.

Affiliates of Wells Fargo Securities, LLC and J.P. Morgan Securities LLC are lenders under the Credit Facility and/or the Term Loan and therefore will receive a portion of the net proceeds from this offering used to repay outstanding amounts on the Credit Facility and the Term Loan. See Underwriting Conflicts of Interest.

Table of Contents

Supplemental U.S. Federal Income Tax Considerations

The following section supplements the discussion of U.S. federal income tax considerations in the section entitled U.S. Federal Income Tax Considerations in the accompanying prospectus.

Protecting Americans from Tax Hikes Act of 2015

On December 18, 2015, the Protecting Americans from Tax Hikes Act of 2015 (the PATH Act) was signed into law. Under the PATH Act, effective December 18, 2015, the exemption from income tax and withholding tax previously applicable to a Non-U.S. Stockholder who holds 5% or less of the Company's common stock with respect to (i) distributions in excess of the Company's current and accumulated earnings and profits to such Non-U.S. Stockholder, (ii) distributions attributable to gain from the sale or exchange by the Company of a United States Real Property Interest to such Non-U.S. Stockholder, and (iii) the sale or exchange of the Company's stock by such Non-U.S. Shareholder has been expanded to apply to a Non-U.S. stockholder who holds 10% or less of the common stock of the Company (after application of certain ownership rules). Additionally, the 10% withholding required with respect to the sale or exchange by a Non-U.S. Stockholder of the Company's stock, if such sale or exchange is subject to FIRPTA, was increased to 15% beginning with sales or exchanges occurring after February 16, 2016.

In addition, the PATH Act revised several other provisions of the Code related to REITs, which modify and supplement certain of the rules described in the section entitled U.S. Federal Income Tax Considerations in the accompanying prospectus, including by:

providing that the 100% excise tax will be imposed on redetermined taxable REIT subsidiary (TRS) service income, which is gross income of a TRS, to the extent the amount of the income would be increased under section 482 of the Internal Revenue Code of 1986, as amended;

providing that personal property will be treated as a real estate asset for purposes of the REIT asset tests to the extent that rents attributable to such property are treated as rents from real property under the REIT gross income tests;

reducing a REIT's percentage of assets that may be invested in TRSs from 25% to 20% for taxable years beginning after December 31, 2017;

treating debt instruments issued by publicly offered REITs as real estate assets, but restricting investments in nonqualified publicly offered REIT debt instruments to not more than 25% of the value of the REIT's total assets for purposes of the REIT asset tests; and

providing that the aggregate amount of dividends designated as capital gain dividends or as qualified dividend income for purposes of the corporate dividends received deduction cannot exceed the actual dividends paid with respect to such year.

Foreign Account Tax Compliance Act

As discussed in the section entitled "U.S. Federal Income Tax Considerations" in the accompanying prospectus, the Foreign Account Tax Compliance Act may impose withholding taxes on certain types of payments made to foreign financial institutions and certain other non-U.S. entities, including payments of dividends with respect to the Company's common stock and the gross proceeds from the sale of the Company's common stock. Under a U.S. Internal Revenue Service notice, withholding tax will not apply to payments of gross proceeds from the sale of the Company's common stock occurring before January 1, 2019.

S-9

Table of Contents**Underwriting**

Wells Fargo Securities, LLC and J.P. Morgan Securities LLC are acting as joint book-running managers for this offering. Subject to the terms and conditions of the underwriting agreement among the Company and the underwriters, the Company has agreed to sell to the underwriters, and the underwriters have agreed to purchase from the Company, the number of shares of common stock listed in the following table opposite the underwriter's name:

| Name | Number of Shares |
|-----------------------------|-------------------------|
| Wells Fargo Securities, LLC | 4,000,000 |
| J.P. Morgan Securities LLC | 4,000,000 |
| Total: | 8,000,000 |

The underwriting agreement provides that the obligations of the underwriters, severally, to purchase the shares of common stock offered hereby are subject to certain conditions precedent and that the underwriters are committed to take and pay for all of the shares of common stock offered by this prospectus supplement, other than those covered by the option described below, if any of those shares are purchased.

The underwriters have an option to buy up to 1,200,000 additional shares of common stock from the Company. The underwriters have 30 days from the date of this prospectus supplement to exercise this option. If any shares are purchased with this option, the underwriters will purchase shares in approximately the same proportion as shown in the table above. Any shares issued and sold under this option will be issued and sold on the same terms and conditions as the other shares that are the subject of this offering.

The underwriters propose to offer the shares of our common stock offered hereby from time to time for sale in one or more transactions on the New York Stock Exchange, in the over-the-counter market, through negotiated transactions or otherwise at market prices prevailing at the time of sale, at prices related to prevailing market prices or at negotiated prices, subject to receipt and acceptance by it and subject to its right to reject any order in whole or in part. The underwriters may effect such transactions by selling the shares of our common stock to or through dealers, and such dealers may receive compensation in the form of discounts, concessions or commissions from the underwriter and/or purchasers of shares of our common stock for whom they may act as agents or to whom they may sell as principals. The difference between the price at which the underwriters purchase shares and the price at which the underwriters resell such shares may be deemed underwriting compensation.

The Company has agreed to indemnify the underwriters and their respective controlling persons against specified liabilities in connection with this offering, including liabilities under the Securities Act of 1933, or to contribute to payments the underwriters may be required to make in respect of those liabilities.

The Company's common stock is traded on the New York Stock Exchange under the symbol HR.

The Company estimates that the total expenses of the offering, including registration, filing, listing and printing fees and legal, accounting and miscellaneous expenses, but excluding the underwriting discounts, will be approximately \$230,000 and are payable by the Company.

The Company has agreed, that, except for common stock issued in this offering and subject to certain additional exceptions, it will not offer, sell, contract to sell, pledge or otherwise dispose of, directly or indirectly, or file with the SEC a registration statement under the Securities Act of 1933, as amended, relating to, any shares of its common stock

or securities convertible into or exchangeable or exercisable for any shares of its common stock, or publicly disclose the intention to make any such offer, sale, pledge, disposition or filing, without the prior written consent of Wells Fargo Securities, LLC and J.P. Morgan Securities LLC for a period of 45 days after the date of this prospectus supplement. Wells Fargo Securities, LLC and J.P. Morgan Securities LLC, in their sole discretion, may waive this lock-up agreement at any time without notice.

S-10

Table of Contents

Certain of the Company's directors and executive officers have also agreed that, subject to certain exceptions, such persons will not, without the prior written consent of Wells Fargo Securities, LLC and J.P. Morgan Securities LLC, offer, sell, contract to sell, grant any option to purchase or otherwise dispose of, directly or indirectly, any shares of common stock or any securities convertible into or exercisable or exchangeable for common stock, or warrants to purchase common stock, for a period of 45 days after the date of this prospectus supplement.

A prospectus supplement in electronic format may be made available on Internet websites maintained by the underwriters of this offering. Other than the prospectus supplement in electronic format, the information on any underwriter's website and any information contained in any other website maintained by the underwriters is not part of the prospectus supplement or the registration statement of which the prospectus supplement forms a part.

Price Stabilization and Short Positions

In connection with this offering, the underwriters may engage in stabilizing transactions, which involve making bids for, purchasing and selling shares of common stock in the open market for the purpose of preventing or retarding a decline in the market price of the common stock while this offering is in progress. These stabilizing transactions may include making short sales of the common stock, which involve the sale by the underwriters of a greater number of shares of common stock than they are required to purchase in this offering, and purchasing shares of common stock on the open market to cover positions created by short sales. Short sales may be covered shorts, which are short positions in an amount not greater than the underwriters' option to purchase additional shares referred to above, or may be naked shorts, which are short positions in excess of that amount. The underwriters may close out any covered short position either by exercising their option, in whole or in part, or by purchasing shares in the open market. In making this determination, the underwriters will consider, among other things, the price of shares available for purchase in the open market compared to the price at which the underwriters may purchase shares through their option. A naked short position is more likely to be created if the underwriters are concerned that there may be downward pressure on the price of the common stock in the open market that could adversely affect investors who purchase in this offering. To the extent that the underwriters create a naked short position, they will purchase shares in the open market to cover the position.

The underwriters have advised the Company that, pursuant to Regulation M of the Securities Act of 1933, they may also engage in other activities that stabilize, maintain or otherwise affect the price of the common stock, including the imposition of penalty bids. This means that if the representatives of the underwriters purchase common stock in the open market in stabilizing transactions or to cover short sales, the representatives can require the underwriters that sold those shares as part of this offering to repay the underwriting discount received by them.

These activities may have the effect of raising or maintaining the market price of the common stock or preventing or retarding a decline in the market price of the common stock, and, as a result, the price of the common stock may be higher than the price that otherwise might exist in the open market. If the underwriters commence these activities, they may discontinue them at any time without notice. The underwriters may carry out these transactions on the NYSE, in the over-the-counter market or otherwise.

Conflicts of Interest

The underwriters and their respective affiliates have engaged in, and may in the future engage in, investment banking, commercial banking and other commercial dealings in the ordinary course of business with the Company and its affiliates, for which they have received and may continue to receive customary fees and commissions. Affiliates of the underwriters act as lenders and/or agents under the Credit Facility and the Term Loan and may receive a portion of the proceeds from this offering. In the ordinary course of their various business activities, the underwriters and their

respective affiliates may make or hold a broad array of investments and actively trade debt and equity securities (or related derivative securities) and financial instruments (which

S-11

Table of Contents

may include bank loans and/or credit default swaps) for their own account and for the accounts of their customers and may at any time hold long and short positions in such securities and instruments. Such investments and securities activities may involve securities and/or instruments of the Company. The underwriters and their affiliates may also make investment recommendations and/or publish or express independent research views in respect of such securities or financial instruments and may hold, or recommend to clients that they acquire, long and/or short positions in such securities and instruments.

The net proceeds from this offering will be used for the acquisition and development of additional healthcare facilities and other general corporate purposes, including the repayment of debt. The Company anticipates that more than 5% of the net proceeds of this offering may be used to reduce outstanding indebtedness under the Credit Facility and the Term Loan. The underwriters or affiliates of the underwriters are lenders under the Credit Facility and/or the Term Loan. Wells Fargo Securities, LLC and J.P. Morgan Securities LLC are joint lead arrangers and joint book runners under the Credit Facility, an affiliate of Wells Fargo Securities, LLC is the administrative agent under the Credit Facility, and an affiliate of J.P. Morgan Securities LLC is the syndication agent under the Credit Facility. Additionally, Wells Fargo Securities, LLC is a joint lead arranger and joint book runner under the Term Loan, and an affiliate of Wells Fargo Securities, LLC is the administrative agent under the Term Loan. Nonetheless, in accordance with FINRA Rule 5121(f), the appointment of a qualified independent underwriter is not necessary in connection with this offering because, among other things, the Company is a real estate investment trust.

Sales Outside the United States

No action has been taken in any jurisdiction (except in the United States) that would permit a public offering of the shares of common stock, or the possession, circulation or distribution of this prospectus supplement, the accompanying prospectus or any other material relating to us or the shares in any jurisdiction where action for that purpose is required. Accordingly, the shares of common stock may not be offered or sold, directly or indirectly, and none of this prospectus supplement, the accompanying prospectus or any other offering material or advertisements in connection with the shares may be distributed or published, in or from any country or jurisdiction except in compliance with any applicable rules and regulations of any such country or jurisdiction.

Each of the underwriters may arrange to sell shares of common stock offered hereby in certain jurisdictions outside the United States, either directly or through affiliates, where they are permitted to do so.

Notice to Prospective Investors in Canada

The shares of common stock may be sold only to purchasers purchasing, or deemed to be purchasing, as principal that are accredited investors, as defined in National Instrument 45-106 Prospectus Exemptions or subsection 73.3(1) of the Securities Act (Ontario), and are permitted clients, as defined in National Instrument 31-103 Registration Requirements, Exemptions and Ongoing Registrant Obligations. Any resale of the shares of common stock must be made in accordance with an exemption from, or in a transaction not subject to, the prospectus requirements of applicable securities laws.

Securities legislation in certain provinces or territories of Canada may provide a purchaser with remedies for rescission or damages if this prospectus supplement (including any amendment thereto) contains a misrepresentation, provided that the remedies for rescission or damages are exercised by the purchaser within the time limit prescribed by the securities legislation of the purchaser's province or territory. The purchaser should refer to any applicable provisions of the securities legislation of the purchaser's province or territory for particulars of these rights or consult with a legal advisor.

Pursuant to section 3A.3 (or, in the case of securities issued or guaranteed by the government of a non-Canadian jurisdiction, section 3A.4) of National Instrument 33-105 Underwriting Conflicts (NI 33-105), the underwriters are not required to comply with the disclosure requirements of NI 33-105 regarding underwriter conflicts of interest in connection with this offering.

S-12

Table of Contents

Notice to Prospective Investors in the European Economic Area

In relation to each Member State of the European Economic Area which has implemented the Prospectus Directive (each, a Relevant Member State), with effect from and including the date on which the Prospectus Directive is implemented in that Relevant Member State (the Relevant Implementation Date), no offer of shares may be made to the public in that Relevant Member State other than:

(A) to any legal entity which is a qualified investor as defined in the Prospectus Directive;

(B) to fewer than 100 or, if the Relevant Member State has implemented the relevant provision of the 2010 PD Amending Directive, 150, natural or legal persons (other than qualified investors as defined in the Prospectus Directive), as permitted under the Prospectus Directive, subject to obtaining the prior consent of the underwriters; or

(C) in any other circumstances falling within Article 3(2) of the Prospectus Directive,

provided that no such offer of shares shall require the Company or the underwriters to publish a prospectus pursuant to Article 3 of the Prospectus Directive or supplement a prospectus pursuant to Article 16 of the Prospectus Directive.

Each person in a Relevant Member State (other than a Relevant Member State where there is a Permitted Public Offer) who initially acquires any shares or to whom any offer is made will be deemed to have represented, acknowledged and agreed that (A) it is a qualified investor within the meaning of the law in that Relevant Member State implementing Article 2(1)(e) of the Prospectus Directive, and (B) in the case of any shares acquired by it as a financial intermediary, as that term is used in Article 3(2) of the Prospectus Directive, the shares acquired by it in the offering have not been acquired on behalf of, nor have they been acquired with a view to their offer or resale to, persons in any Relevant Member State other than qualified investors as defined in the Prospectus Directive, or in circumstances in which the prior consent of the subscribers has been given to the offer or resale. In the case of any shares being offered to a financial intermediary as that term is used in Article 3(2) of the Prospectus Directive, each such financial intermediary will be deemed to have represented, acknowledged and agreed that the shares acquired by it in the offer have not been acquired on a non-discretionary basis on behalf of, nor have they been acquired with a view to their offer or resale to, persons in circumstances which may give rise to an offer of any shares to the public other than their offer or resale in a Relevant Member State to qualified investors as so defined or in circumstances in which the prior consent of the underwriters have been obtained to each such proposed offer or resale.

The Company, the underwriters and their affiliates will rely upon the truth and accuracy of the foregoing representation, acknowledgement and agreement.

This prospectus supplement and the accompanying prospectus have been prepared on the basis that any offer of shares in any Relevant Member State will be made pursuant to an exemption under the Prospectus Directive from the requirement to publish a prospectus for offers of shares. Accordingly any person making or intending to make an offer in that Relevant Member State of shares which are the subject of the offering contemplated in this prospectus supplement and the accompanying prospectus may only do so in circumstances in which no obligation arises for the Company or the underwriters to publish a prospectus pursuant to Article 3 of the Prospectus Directive in relation to such offer. Neither the Company nor the underwriters have authorized, nor do they authorize, the making of any offer of shares in circumstances in which an obligation arises for, the Company or the underwriters to publish a prospectus for such offer.

For the purpose of the above provisions, the expression an offer to the public in relation to any shares in any Relevant Member State means the communication in any form and by any means of sufficient information on the terms of the

offer and the shares to be offered so as to enable an investor to decide to purchase or subscribe the shares, as the same may be varied in the Relevant Member State by any measure implementing the Prospectus Directive in the Relevant Member State and the expression Prospectus Directive means Directive 2003/71/EC

S-13

Table of Contents

(including the 2010 PD Amending Directive, to the extent implemented in the Relevant Member States) and includes any relevant implementing measure in the Relevant Member State and the expression 2010 PD Amending Directive means Directive 2010/73/EU.

Notice to Prospective Investors in the United Kingdom

In addition, in the United Kingdom, this document is being distributed only to, and is directed only at, and any offer subsequently made may only be directed at persons who are qualified investors (as defined in the Prospectus Directive) (i) who have professional experience in matters relating to investments falling within Article 19 (5) of the Financial Services and Markets Act 2000 (Financial Promotion) Order 2005, as amended (the Order) and/or (ii) who are high net worth companies (or persons to whom it may otherwise be lawfully communicated) falling within Article 49(2)(a) to (d) of the Order (all such persons together being referred to as relevant persons). This document must not be acted on or relied on in the United Kingdom by persons who are not relevant persons. In the United Kingdom, any investment or investment activity to which this document relates is only available to, and will be engaged in with, relevant persons.

Notice to Prospective Investors in Switzerland

This document as well as any other material relating to the shares of common stock which are the subject of the offering contemplated by this prospectus supplement and the accompanying prospectus (the Shares) do not constitute an issue prospectus pursuant to Article 652a of the Swiss Code of Obligations. The Shares will not be listed on the SWX Swiss Exchange and, therefore, the documents relating to the Shares, including, but not limited to, this document, do not claim to comply with the disclosure standards of the listing rules of SWX Swiss Exchange and corresponding prospectus schemes annexed to the listing rules of the SWX Swiss Exchange.

The Shares are being offered in Switzerland by way of a private placement, i.e. to a small number of selected investors only, without any public offer and only to investors who do not purchase the Shares with the intention to distribute them to the public. The investors will be individually approached by the issuer from time to time.

This document as well as any other material relating to the Shares is personal and confidential and do not constitute an offer to any other person. This document may only be used by those investors to whom it has been handed out in connection with the offering described herein and may neither directly nor indirectly be distributed or made available to other persons without express consent of the issuer. It may not be used in connection with any other offer and shall in particular not be copied and/or distributed to the public in (or from) Switzerland.

Dubai International Financial Centre

This prospectus supplement and the accompanying prospectus relate to an exempt offer in accordance with the Offered Securities Rules of the Dubai Financial Services Authority, or the DFSA. It is intended for distribution only to persons of a type specified in those rules. It must not be delivered to, or relied on by, any other person. The DFSA has no responsibility for reviewing or verifying any documents in connection with exempt offers. The DFSA has not approved this document nor taken steps to verify the information set out in it, and has no responsibility for it. The shares which are the subject of the offering contemplated by this prospectus supplement may be illiquid and/or subject to restrictions on their resale. Prospective purchasers of the shares offered should conduct their own due diligence on the shares. If you do not understand the contents of this prospectus supplement or the accompanying prospectus, you should consult an authorized financial adviser.

Notice to Prospective Investors in Hong Kong

The shares may not be offered or sold in Hong Kong by means of any document other than (i) in circumstances which do not constitute an offer to the public within the meaning of the Companies Ordinance (Cap. 32, Laws of Hong Kong), or (ii) to professional investors within the meaning of the Securities and Futures Ordinance (Cap.

S-14

Table of Contents

571, Laws of Hong Kong) and any rules made thereunder, or (iii) in other circumstances which do not result in the document being a prospectus within the meaning of the Companies Ordinance (Cap. 32, Laws of Hong Kong) and no advertisement, invitation or document relating to the shares may be issued or may be in the possession of any person for the purpose of issue (in each case whether in Hong Kong or elsewhere), which is directed at, or the contents of which are likely to be accessed or read by, the public in Hong Kong (except if permitted to do so under the laws of Hong Kong) other than with respect to shares which are or are intended to be disposed of only to persons outside Hong Kong or only to professional investors within the meaning of the Securities and Futures Ordinance (Cap. 571, Laws of Hong Kong) and any rules made thereunder.

Notice to Prospective Investors in Japan

The shares offered in this prospectus supplement and the accompanying prospectus have not been registered under the Securities and Exchange Law of Japan. The shares have not been offered or sold and will not be offered or sold, directly or indirectly, in Japan or to or for the account of any resident of Japan, except (i) pursuant to an exemption from the registration requirements of the Securities and Exchange Law and (ii) in compliance with any other applicable requirements of Japanese law.

Notice to Prospective Investors in Singapore

This prospectus supplement and the accompanying prospectus have not been registered as a prospectus with the Monetary Authority of Singapore. Accordingly, this prospectus supplement, the accompanying prospectus and any other document or material in connection with the offer or sale, or invitation for subscription or purchase, of the shares may not be circulated or distributed, nor may the shares be offered or sold, or be made the subject of an invitation for subscription or purchase, whether directly or indirectly, to persons in Singapore other than (i) to an institutional investor under Section 274 of the Securities and Futures Act, Chapter 289 of Singapore (the "SFA"), (ii) to a relevant person pursuant to Section 275(1), or any person pursuant to Section 275(1A), and in accordance with the conditions specified in Section 275 of the SFA or (iii) otherwise pursuant to, and in accordance with the conditions of, any other applicable provision of the SFA, in each case subject to compliance with conditions set forth in the SFA.

Where the shares are subscribed or purchased under Section 275 of the SFA by a relevant person which is:

a corporation (which is not an accredited investor (as defined in Section 4A of the SFA)) the sole business of which is to hold investments and the entire share capital of which is owned by one or more individuals, each of whom is an accredited investor; or

a trust (where the trustee is not an accredited investor) whose sole purpose is to hold investments and each beneficiary of the trust is an individual who is an accredited investor;

shares, debentures and units of shares and debentures of that corporation or the beneficiaries' rights and interest (howsoever described) in that trust shall not be transferred within six months after that corporation or that trust has acquired the shares pursuant to an offer made under Section 275 of the SFA except:

to an institutional investor (for corporations, under Section 274 of the SFA) or to a relevant person defined in Section 275(2) of the SFA, or to any person pursuant to an offer that is made on terms that such shares,

debentures and units of shares and debentures of that corporation or such rights and interest in that trust are acquired at a consideration of not less than S\$200,000 (or its equivalent in a foreign currency) for each transaction, whether such amount is to be paid for in cash or by exchange of securities or other assets, and further for corporations, in accordance with the conditions specified in Section 275 of the SFA;

where no consideration is or will be given for the transfer; or

where the transfer is by operation of law.

S-15

Table of Contents

Notice to Prospective Investors in Australia

No prospectus or other disclosure document (as defined in the Corporations Act 2001 (Cth) of Australia (Corporations Act)) in relation to the common shares has been or will be lodged with the Australian Securities & Investments Commission (ASIC). This document has not been lodged with ASIC and is only directed to certain categories of exempt persons. Accordingly, if you receive this document in Australia:

(a) you confirm and warrant that you are either:

(i) a sophisticated investor under section 708(8)(a) or (b) of the Corporations Act;

(ii) a sophisticated investor under section 708(8)(c) or (d) of the Corporations Act and that you have provided an accountant's certificate to us which complies with the requirements of section 708(8)(c)(i) or (ii) of the Corporations Act and related regulations before the offer has been made;

(iii) a person associated with the company under section 708(12) of the Corporations Act; or

(iv) a professional investor within the meaning of section 708(11)(a) or (b) of the Corporations Act, and to the extent that you are unable to confirm or warrant that you are an exempt sophisticated investor, associated person or professional investor under the Corporations Act any offer made to you under this document is void and incapable of acceptance; and

(b) you warrant and agree that you will not offer any of the common shares for resale in Australia within 12 months of that common shares being issued unless any such resale offer is exempt from the requirement to issue a disclosure document under section 708 of the Corporations Act.

Legal Matters

The validity of the shares offered by this prospectus supplement and certain matters of United States federal income tax law will be passed upon for the Company by Waller Lansden Dortch & Davis, LLP, Nashville, Tennessee. Bryan Cave LLP, St. Louis, Missouri, is acting as counsel for the underwriters in connection with this offering.

Experts

The financial statements and schedules as of December 31, 2015 and 2014 and for each of the three years in the period ended December 31, 2015 and management's assessment of the effectiveness of internal control over financial reporting as of December 31, 2015 incorporated by reference in this prospectus supplement and the accompanying prospectus have been so incorporated in reliance on the reports of BDO USA, LLP, an independent registered public accounting firm, incorporated herein by reference, given on authority of said firm as experts in auditing and accounting.

Where You Can Find More Information

The Company files annual, quarterly and current reports, proxy statements and other information with the SEC. You may read and copy any documents the Company files at the SEC's public reference rooms at 100 F Street, N.E., Washington, D.C. 20549 and at regional offices in New York, New York and Chicago, Illinois. Please call the SEC at 1-800-SEC-0330 for further information on the operation of public reference rooms. The Company's SEC filings are also available to the public at the SEC's website at www.sec.gov. In addition, the Company's stock is listed for trading

on the NYSE. You can inspect the Company's reports, proxy statements and other information at the offices of the NYSE, 20 Broad Street, New York, New York 10005.

The Company makes available free of charge through its website, which you can find at www.healthcarerealty.com, the Company's annual reports on Form 10-K, quarterly reports on Form 10-Q,

S-16

Table of Contents

current reports on Form 8-K, and amendments to these reports filed or furnished pursuant to Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended, as soon as reasonably practicable after the Company electronically files such material with, or furnishes it to, the SEC. Information on the Company's website shall not be deemed to be a part of the prospectus supplement or the accompanying prospectus.

Incorporation of Certain Information by Reference

The SEC allows the Company to incorporate by reference information into this prospectus supplement and the accompanying prospectus. This means that the Company can disclose important information to you by referring you to another document that the Company has filed separately with the SEC that contains that information. The information incorporated by reference is considered to be part of this prospectus supplement and the accompanying prospectus. Information that the Company files with the SEC after the date of this prospectus supplement will automatically modify and supersede the information included or incorporated by reference into this prospectus supplement and the accompanying prospectus to the extent that the subsequently filed information modifies or supersedes the existing information.

The f