

AMAG PHARMACEUTICALS INC.
Form 424B5
July 31, 2015

Use these links to rapidly review the document

[Table of Contents](#)

[TABLE OF CONTENTS](#)

[Table of Contents](#)

Filed Pursuant to Rule 424b(5)
Registration No. 333-202252

CALCULATION OF REGISTRATION FEE

Title of Each Class of Securities to be Registered	Amount to be Registered(1)	Proposed Maximum Offering Price Per Unit	Proposed Maximum Aggregate Offering Price	Amount of Registration Fee(2)
Common Stock, par value \$0.01 per share	3,622,500	\$63.75	\$230,934,375	\$26,834.58

(1) Includes 472,500 shares of common stock, par value \$0.01 per share, which may be purchased by the underwriters upon exercise of the underwriters' option to purchase additional shares.

(2) Calculated in accordance with Rule 456(b) and 457(r) of the Securities Act of 1933, as amended. This "Calculation of Registration" table shall be deemed to update the "Calculation of Registration Fee" table in the registrant's Registration Statement on Form S-3 (File No. 333-202252) in accordance with Rules 456(b) and 457(r) under the Securities Act of 1933, as amended.

Table of Contents

Prospectus Supplement

(To Prospectus dated February 24, 2015)

3,150,000 Shares

AMAG Pharmaceuticals, Inc.

Common Stock

We are offering 3,150,000 shares of our common stock. Our common stock is listed on The NASDAQ Global Select Market under the symbol "AMAG." On July 30, 2015, the last reported sale price of our common stock on The NASDAQ Global Select Market was \$64.77 per share.

We expect to use the net proceeds from this offering for the expansion and diversification of our product portfolio through the in-license or purchase of additional pharmaceutical products or companies, such as Cord Blood Registry® (CBR®), to refinance certain existing indebtedness, to pay various fees and expenses incurred in connection with the CBR acquisition and related financing transactions as well as for general corporate purposes. The completion of this offering is not contingent upon consummation of the CBR acquisition, and consummation of the CBR acquisition is not contingent on the completion of this offering.

Investing in our common stock involves risks. Before buying any shares, you should read the discussion of material risks of investing in our common stock in "Risk Factors" on page S-7 of this prospectus supplement, and in the risks discussed in the documents incorporated by reference into this prospectus supplement, as they may be amended, updated or modified periodically in our reports filed with the Securities and Exchange Commission.

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

	PER SHARE	TOTAL
Public offering price	\$ 63.750	\$ 200,812,500
Underwriting discounts and commissions ⁽¹⁾	\$ 3.506	\$ 11,044,687
Proceeds to us, before expenses	\$ 60.244	\$ 189,767,813

(1)
See "Underwriting."

Delivery of the shares of common stock is expected to be made on or about August 5, 2015. We have granted the underwriters an option for a period of 30 days to purchase an additional 472,500 shares of our common stock. If the underwriters exercise the option in full, the total underwriting discounts and commissions payable by us will be \$12,701,391, and the total proceeds to us, before expenses, will be \$218,232,984.

Joint Book-Running Managers

Jefferies

Lead Manager

Barclays

Leerink Partners

Co-Managers

Guggenheim Securities

Prospectus Supplement dated July 30, 2015

Raymond James

Table of Contents

Table of Contents

	Page
Prospectus Supplement	
<u>About This Prospectus Supplement</u>	<u>S-ii</u>
<u>Trade Names, Trademarks and Service Marks</u>	<u>S-ii</u>
<u>Market and Industry Data</u>	<u>S-iii</u>
<u>Cautionary Note Regarding Forward-Looking Statements</u>	<u>S-iii</u>
<u>Summary</u>	<u>S-1</u>
<u>Risk Factors</u>	<u>S-7</u>
<u>Use of Proceeds</u>	<u>S-8</u>
<u>Capitalization</u>	<u>S-10</u>
<u>Dividend Policy</u>	<u>S-13</u>
<u>Price Range of Common Stock</u>	<u>S-13</u>
<u>Description of Our Common Stock</u>	<u>S-14</u>
<u>Description of Our Preferred Stock</u>	<u>S-17</u>
<u>Description of Certain Indebtedness</u>	<u>S-21</u>
<u>Material U.S. Federal Income Tax Considerations for Non-U.S. Holders of Our Common Stock</u>	<u>S-24</u>
<u>Underwriting</u>	<u>S-28</u>
<u>Legal Matters</u>	<u>S-35</u>
<u>Experts</u>	<u>S-35</u>
<u>Where You Can Find More Information</u>	<u>S-35</u>
<u>Documents Incorporated By Reference</u>	<u>S-36</u>

Prospectus

<u>About This Prospectus</u>	<u>1</u>
<u>Cautionary Note Regarding Forward-Looking Statements</u>	<u>2</u>
<u>Our Company</u>	<u>3</u>
<u>Risk Factors</u>	<u>5</u>
<u>Description of Securities</u>	<u>6</u>
<u>Ratio of Earnings to Combined Fixed Charges and Preference Stock Dividends</u>	<u>8</u>
<u>Use of Proceeds</u>	<u>9</u>
<u>Selling Stockholders</u>	<u>10</u>
<u>Plan of Distribution</u>	<u>11</u>
<u>Legal Matters</u>	<u>13</u>
<u>Experts</u>	<u>13</u>
<u>Documents Incorporated By Reference</u>	<u>13</u>
<u>Where You Can Find More Information</u>	<u>14</u>

Table of Contents

ABOUT THIS PROSPECTUS SUPPLEMENT

We are providing information to you about this offering in two parts. The first part is this prospectus supplement, which describes the specific terms of the offering. The second part, the accompanying prospectus, gives more general information. You should read this prospectus supplement and the accompanying prospectus, including the information incorporated by reference herein and therein and any free writing prospectus we have authorized for use in connection with this offering, in their entirety before making an investment decision.

We have not and the underwriters have not authorized anyone to provide you with any information other than information contained or incorporated by reference in this prospectus supplement and the accompanying prospectus or any free writing prospectus prepared by or on behalf of us or to which we have referred you. If the description of the offering varies between this prospectus supplement and the accompanying prospectus, you should rely on the information in this prospectus supplement. We and the underwriters take no responsibility for, and can provide no assurance as to the reliability of, any other information that others may give you.

If the description of the offering varies between any free writing prospectus we have authorized for use in connection with this offering and this prospectus supplement, you rely on the information in such free writing prospectus.

You should assume that the information in this prospectus supplement, the accompanying prospectus, the documents incorporated by reference herein and therein and in any free writing prospectus we have authorized for use in connection with this offering is accurate only as of the respective dates of those documents in which such information is contained, regardless of the time of delivery of this prospectus supplement or any sale of shares of common stock. Our business, financial condition, results of operations and prospects may have changed since those dates.

Any statement made in this prospectus supplement or in a document incorporated by reference in this prospectus supplement will be deemed to be modified or superseded for purposes of this prospectus supplement to the extent that a statement contained in this prospectus supplement or in any other subsequently filed document that is also incorporated or deemed to be incorporated by reference in this prospectus supplement modifies or supersedes that statement. Any statement so modified or superseded will not be deemed, except as so modified or superseded, to constitute a part of this prospectus supplement. See "Documents Incorporated by Reference" in this prospectus supplement.

We are not, and the underwriters are not, making an offer to sell these securities in any jurisdiction where the offer or sale is not permitted.

References in this prospectus supplement and the accompanying prospectus to "AMAG," "the Company," "we," "our" and "us" refer to AMAG Pharmaceuticals, Inc. and its consolidated subsidiaries, except where the context otherwise requires or as otherwise indicated.

TRADE NAMES, TRADEMARKS AND SERVICE MARKS

AMAG Pharmaceuticals® and *Feraheme*® are registered trademarks of AMAG Pharmaceuticals, Inc. *MuGard*® is a registered trademark of Abeona Therapeutics, Inc. (formerly known as PlasmaTech Biopharmaceuticals, Inc. and Access Pharmaceuticals, Inc.). *Makena*® is a registered trademark of Lumara Health Inc. Lumara Health™ is a registered trademark of Lumara Health IP Ltd. Cord Blood Registry® and CBR® are registered trademarks of CBR Systems, Inc. *Feraheme*®, our logo and other trade names, trademarks or service marks of AMAG appearing in this prospectus supplement, the accompanying prospectus, the documents incorporated by reference herein and therein and any free writing prospectus we authorize for use in connection with this offering are the property of AMAG. Trade names, trademarks and service marks of other organizations are the property of their respective holders.

Table of Contents

MARKET AND INDUSTRY DATA

We obtained the industry, market and competitive position data in this prospectus supplement from our own internal estimates and research as well as from industry and general publications and research surveys and studies conducted by third parties. While we believe that each of these studies and publications is reliable, we have not independently verified market and industry data from third-party sources. In addition, while we believe our internal company research is reliable and the market definitions we use are appropriate, neither our internal research nor these definitions have been verified by any independent source.

CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS

Any statements in this prospectus supplement, the accompanying prospectus, any free writing prospectus, including the documents that we incorporate by reference herein, about our expectations, beliefs, plans, objectives, assumptions or future events or performance are not historical facts and are forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended (the Securities Act), and Section 21E of the Securities Exchange Act of 1934, as amended (the Exchange Act). You can identify these forward-looking statements by the use of words or phrases such as "believe," "may," "could," "will," "estimate," "continue," "anticipate," "intend," "seek," "plan," "expect," "potential," "predict," "project," "should," or "would." Among the factors that could cause actual results to differ materially from those indicated in the forward-looking statements are risks and uncertainties inherent in our business. Such risks and uncertainties include, among others, factors discussed under "Risk Factors" in this prospectus supplement, those risks identified in our filings with the U.S. Securities and Exchange Commission (SEC), including our Annual Report on Form 10-K for the year ended December 31, 2014, our Quarterly Report on Form 10-Q for the quarterly period ended June 30, 2015, and any subsequent filings with the SEC. Any such risks and uncertainties could materially and adversely affect our results of operations, our profitability and our cash flows, which would, in turn, have a significant and adverse impact on our stock price. Use of the term "including" above shall mean in each case "including, but not limited to."

You should not place undue reliance on any forward-looking statements. Forward-looking statements speak only as of the date of the report, document, press release, webcast, call or other communication in which they are made. We expressly disclaim any obligation to update our forward-looking statements, whether as a result of new information, future events or circumstances, or otherwise, except as required by law.

You should understand that our actual future results may be materially different from what we expect. We qualify all of the forward-looking statements in the foregoing documents by these cautionary statements. Although we believe that the expectations reflected in our forward-looking statements are reasonable, we cannot guarantee future results, events, levels of activity, performance or achievement. Before deciding to purchase our securities, you should carefully consider the risk factors incorporated herein by reference, in addition to the other information set forth in this prospectus supplement, any free writing prospectus and in the documents incorporated by reference.

Table of Contents

SUMMARY

This summary highlights selected information contained elsewhere or incorporated by reference in this prospectus supplement and accompanying prospectus and does not contain all of the information you need to consider in making your investment decision. You should carefully read this entire prospectus supplement, the accompanying prospectus, including the documents incorporated by reference herein and therein, and any free writing prospectus we authorize for use in connection with this offering, before making an investment decision.

For purposes of this prospectus supplement, unless the context otherwise requires, (i) the terms "AMAG," "AMAG Pharmaceuticals," "we," "us" and "our" refer to AMAG Pharmaceuticals, Inc. and its subsidiaries prior to the Acquisition, (ii) the term "CBR" refers to CBR Acquisition Holdings Corp. and its subsidiary prior to the Acquisition and (iii) the term "Combined Company" refers to AMAG and CBR, collectively, after the consummation of the Acquisition. See " The Acquisition."

Overview

AMAG Pharmaceuticals

We are a specialty pharmaceutical company that uses our business and clinical expertise to bring medical therapies and other innovations to market that provide clear benefits and improve people's lives.

Our strategy is to:

- § Utilize our specialty sales and marketing teams along with our consumer marketing expertise to increase prescriber and consumer awareness of the benefits of our products.
- § Expand our specialty pharmaceutical product portfolio through the acquisition of products or companies that leverage our commercial footprint and core competencies.
- § Contribute to improve the health of patients through the development and commercialization of specialty pharmaceutical products.

We have a diverse portfolio of products in the areas of maternal health, anemia management and cancer supportive care.

Our key products include:

- § Makena® (hydroxyprogesterone caproate injection), the only FDA-approved drug used to reduce the risk of preterm birth in women with a singleton pregnancy who have had a prior spontaneous singleton preterm birth.
- § Feraheme® (ferumoxytol) Injection For Intravenous (IV) Use, an intravenous infusion used to treat iron deficiency anemia (IDA) in adult patients with chronic kidney disease (CKD).
- § MuGard® Mucoadhesive Oral Wound Rinse, a mucoadhesive oral wound rinse that is a key treatment for the management of oral mucositis/stomatitis and all types of oral wounds (mouth sores and injuries), including aphthous ulcers/canker sores and traumatic ulcers, such as those caused by oral surgery or ill-fitting dentures or braces.

Currently, our two primary sources of revenue are from sales of Makena and Feraheme. We sell Makena in the United States to specialty pharmacies and distributors, who fill prescriptions from healthcare providers, hospitals, and integrated delivery systems. We sell Feraheme in the United States to authorized wholesalers and specialty distributors, who in turn, sell Feraheme to hospitals, hematology and oncology centers, and

nephrology clinics where it is administered by a healthcare professional (physician or nurse).

S-1

Table of Contents

The Acquisition

On June 29, 2015, we entered into a Stock Purchase Agreement (the Acquisition Agreement) with CBR Holdco, LLC (Seller) and CBR, pursuant to which Seller has agreed to sell, and we agreed to purchase, all of the outstanding equity securities of CBR for an aggregate of \$700.0 million in cash consideration, subject to net working capital, net debt, transaction expense and other adjustments as set forth in the Acquisition Agreement (the Acquisition). The Acquisition has been unanimously approved by AMAG's and CBR's boards of directors. Closing of the Acquisition is subject to customary conditions and is expected to close during the third quarter of 2015.

CBR is the largest private umbilical cord blood stem cell bank in the world. It offers pregnant women and their families the ability to collect, process and cryogenically preserve newborn umbilical cord blood and tissue stem cell units. CBR also partners with leading academic institutions that conduct clinical trials focused on evaluating the use of stem cells for regenerative medicine applications in diseases and conditions that have no cure today.

CBR's cord blood banking services include collection, processing and storage of both cord blood and cord tissue (the CBR Services). CBR processes the collected blood and/or tissue and long-term cryopreserves the stem cells contained in cord blood and tissue.

Currently, stored cord blood stem cells can be used in treatments for over 80 diseases including blood disorders, cancers, immune disorders and metabolic disorders, often for siblings or other family members. Stem cells from cord blood and cord tissue may also have potential applications in emerging therapies, including for general injuries and tissue regeneration. CBR is partnered with institutions on five FDA-regulated clinical trials, four of which are active and recruiting participants. Currently, CBR provides cord blood stem cells for FDA-regulated clinical trials on treatments for cerebral palsy, autism, acquired hearing loss and pediatric stroke.

CBR has been accredited with the AABB since 1998 (formerly known as the American Association of Blood Banks) and the company's quality standards have been recognized through ISO 9001:2008 certification – the global business standard for quality. CBR is also the first family newborn stem cell bank to partner with leading research institutions to establish FDA-regulated clinical trials exploring the potential regenerative ability of stem cells to help treat conditions that have no cure today, including acquired hearing loss, autism, cerebral palsy, and pediatric stroke. Approximately 73% of the stem cell units released by CBR have been used for experimental regenerative therapies, which CBR believes is more than any other family cord blood bank in the world.

CBR directly markets to pregnant women and their families through social media and electronic marketing, and believes that it reaches approximately two million pregnant women each year. CBR also utilizes its consumer sales team to develop customer referrals from its existing base of over 350,000 families. CBR has a team of inside tele-sales representatives who are dedicated to a direct-to-consumer approach based off of CBR's electronic marketing lead generation and qualification expertise. CBR additionally employs approximately 50 field sales representatives focused on calling on approximately 8,000 obstetricians in the United States.

We believe the Acquisition will result in a number of strategic and financial benefits to the Combined Company. These benefits include:

- § expanding our suite of maternal health offerings;
- § further diversifying of our revenue base in a way that is accretive to net income from continuing operations and adjusted earnings before interest expense, income taxes, depreciation and amortization;
- § adding complementary commercial capabilities for a combined and expanded maternal health sales effort that will allow for broader and more frequent coverage of obstetricians which, combined with

Table of Contents

CBR's consumer targeting and marketing expertise, will potentially drive accelerated growth of Makena and the CBR Services; and

§

generating approximately \$15 million in operational cost savings in 2016, resulting from, among other things, anticipated reductions in general and administrative expenses and sales and marketing expenses.

The anticipated cost savings described above are based on estimates and assumptions that we consider reasonable but that are inherently uncertain. Our expected cost savings, as well as any revenue or other synergies, are subject to significant business, economic, regulatory and competitive uncertainties and contingencies, all of which are difficult to predict and many of which are beyond our control. As a result, there can be no assurance that our expected cost savings, as well as any potential revenue or other synergies, will be realized in the timeframe we currently anticipate or at all. See "Risk Factors" on page S-7.

For the years ended December 31, 2013 and 2014 and the six months ended June 30, 2015, CBR generated revenue under generally accepted accounting principles in the United States (GAAP) of \$108 million, \$122 million and \$59 million, respectively. These GAAP revenue amounts include the impact of a downward adjustment to deferred revenue in connection with purchase accounting adjustments from the 2012 acquisition of CBR by its acquirer to record the deferred revenue at its fair value. Excluding the impact of this purchase accounting adjustment to deferred revenue, CBR's Non-GAAP revenue for the years ended December 31, 2013 and 2014 and the six months ended June 30, 2015 would have been \$124 million, \$127 million and \$61 million, respectively, after adjusting for the incremental revenue impacts of \$16 million, \$5 million and \$2 million, respectively. In connection with AMAG's acquisition of CBR, we expect that purchase accounting adjustments will be made to CBR's deferred revenue balance at the acquisition date, resulting in differences between GAAP and non-GAAP revenues in future periods for AMAG, with the largest impact affecting the first 12 months following the closing of the Acquisition.

CBR's Non-GAAP revenue is a non-GAAP measure. Management believes this non-GAAP information is useful for investors, taken in conjunction with AMAG's and CBR's GAAP financial statements, because it provides greater transparency regarding CBR's historical operating performance. Non-GAAP information is not prepared under a comprehensive set of accounting rules and should only be used to supplement an understanding of CBR's operating results as reported under GAAP, not as a substitute for GAAP. In addition, this non-GAAP financial measure is unlikely to be comparable with similar non-GAAP information provided by other companies. The determination of the amounts that are excluded from non-GAAP financial measures is a matter of management judgment and depends upon, among other factors, the nature of the underlying expense or income amounts.

Financing Transactions

On June 29, 2015, we entered into a commitment letter (the Commitment Letter) with Jefferies Finance LLC and Barclays Bank PLC (together, the Joint Lead Arrangers), pursuant to which the Joint Lead Arrangers and additional lenders (together, the Lenders) committed to provide to us (1) a senior secured term loan facility of up to \$350.0 million (the New Credit Facility) and (2) a senior unsecured bridge loan facility of up to \$450.0 million (the Bridge Loan Facility and together with the New Credit Facility, the Committed Financing), in each case, subject to the execution of definitive documentation and customary conditions. The Commitment Letter provides that our receipt of net cash proceeds from the issuance of common equity or equity linked securities prior to the closing date of the Acquisition would reduce the aggregate commitments described above on a dollar-for-dollar basis until such aggregate commitments are equal to \$600.0 million, allocated at our discretion so long as the commitments under the New Credit Facility would be at least \$250.0 million and the commitments under the Bridge Loan Facility would be at least \$300.0 million. In addition, the Commitment Letter provides that the commitments under the Bridge Loan Facility would be reduced on a dollar-for-dollar basis by the gross proceeds we may receive from our issuance of senior unsecured notes (the Notes, and collectively with the Bridge Loan Facility and the New

Table of Contents

Credit Facility, the Debt Financing). We expect to enter into definitive documentation for the Debt Financing contemporaneously with the closing of the Acquisition. See "Description of Certain Indebtedness" for a description of the anticipated terms of the New Credit Facility.

We expect to use the net proceeds from this offering (1) for the expansion and diversification of our product portfolio through the in-license or purchase of additional pharmaceutical products or companies, such as CBR, (2) to repay and terminate our existing secured term loan facility (the Existing Credit Facility), (3) to pay various fees and expenses incurred in connection with the Acquisition and the Debt Financing, and (4) for general corporate purposes. We refer to the repayment and termination of the Existing Credit Facility, the payment of fees and expenses incurred in connection with the Acquisition and the Debt Financing, the consummation of this offering, the Debt Financing, and the closing of the Acquisition as the "Transactions."

Business Strategy

The strategy of the Combined Company will be to continue our focus on acquiring and commercializing specialty pharmaceutical products and offering prescription drugs and newborn stem cell collection and cryopreservation through a combined sales and marketing team. We believe this strategy will allow the Combined Company to realize the benefits of the Acquisition and deliver further growth and increasing profitability as compared to AMAG and CBR as stand-alone companies.

Following completion of the Acquisition, the Combined Company will execute its strategy by:

- § marketing our current products and the CBR Services through our expanded sales channels with enhanced direct-to-consumer capabilities;
- § utilizing our expertise to expand product labels and increase prescriptions on existing products; and
- § pursuing select acquisitions to further diversify our product portfolio and improve profitability.

Recent Developments

As previously disclosed, on July 20, 2015, the Federal Trade Commission (the FTC) notified us that it is conducting an investigation into whether Lumara Health or its predecessor has engaged in unfair methods of competition with respect to *Makena* or any hydroxyprogesterone caproate product. We have subsequently gained additional insight and guidance into what information would be helpful to the FTC's investigation. We will fully cooperate with and will expeditiously provide a thorough response to the FTC.

The FTC noted in its letter that the existence of the investigation does not indicate that the FTC has concluded that Lumara Health or its predecessor has violated the law and we believe that our contracts and practices comply with relevant law and policy, including the federal Drug Quality and Security Act (the DQSA), which was enacted in November 2013, and public statements from and enforcement actions by the U.S. Food and Drug Administration (the FDA) regarding its implementation of the DQSA. We intend to provide the FTC a brief overview of the DQSA for context, which we believe will be helpful, including (i) how the statute outlined that large-scale compounding of products that are copies or near-copies of FDA-approved drugs (like *Makena*) is not in the interests of public safety, (ii) our belief that the DQSA has had a significant impact on the compounding of hydroxyprogesterone caproate, and (iii) how our contracts with former compounders do allow those compounders to continue to serve physicians and patients with respect to supplying medically necessary alternative/altered forms of hydroxyprogesterone caproate. Given the early stages of this inquiry, we cannot at this time assess potential outcome of this investigation.

For additional information on the DQSA, please refer to our Annual Report on Form 10-K under the heading *Government Regulation* *Drug Quality and Security Act in Part I, Item 1 Business*.

Table of Contents

The Offering

The summary below describes the principal terms of the offering. This summary does not contain all of the information that is important relating to an investment in the company and the shares of common stock offered hereby. Certain of the terms and conditions described below are subject to important limitations and exceptions. The "Description of Securities" section of the accompanying prospectus, as supplemented by the "Description of Our Common Stock" and "Description of Our Preferred Stock" sections of this prospectus supplement, contains a more detailed description of the terms and conditions of our capital stock.

Common Stock Offered by Us	3,150,000 shares of common stock.
Option to Purchase Additional Shares from Us	We have granted the underwriters an option for a period of up to 30 days from the date of this prospectus supplement to purchase up to 472,500 additional shares of common stock.
Common Stock to be Outstanding Immediately After This Offering	34,018,011 shares (or 34,490,511 shares if the underwriters exercise their option to purchase additional shares in full).
Use of Proceeds	We expect to use the net proceeds from this offering (1) for the expansion and diversification of our product portfolio through the in-license or purchase of additional pharmaceutical products or companies, such as CBR, (2) to repay and terminate our existing secured term loan facility (the Existing Credit Facility), (3) to pay various fees and expenses incurred in connection with the Acquisition and the Debt Financing, and (4) for general corporate purposes. Completion of this offering is not contingent upon consummation of the Acquisition. If the underwriters exercise their option to purchase additional shares, we intend to use the net proceeds therefrom for general corporate purposes. See "Use of Proceeds" on page S-8.
Risk Factors	In analyzing an investment in the shares of common stock being offered pursuant to this prospectus supplement, you should carefully consider, along with other matters included or incorporated by reference in this prospectus supplement or the accompanying prospectus, the information set forth under "Risk Factors" in this prospectus supplement and the risks discussed in the documents incorporated by reference in this prospectus supplement, as they may be amended, updated or modified periodically in our reports filed with the SEC.
NASDAQ Symbol	"AMAG"
The number of shares of common stock to be outstanding after this offering is based on 30,868,011 shares of common stock outstanding on June 30, 2015 and excludes:	
§	2,807,844 shares of our common stock issuable upon the exercise of outstanding stock options issued under our equity compensation plans, at a weighted average exercise price of \$29.53 per share;

Edgar Filing: AMAG PHARMACEUTICALS INC. - Form 424B5

Table of Contents

- § 728,180 shares of our common stock reserved for issuance in connection with restricted stock units issued under our equity compensation plans;
- § an additional 4,309,493 shares of our common stock available for future grants under our equity compensation plans;
- § 7,381,581 shares of our common stock issuable upon the exercise of outstanding warrants, at an initial exercise price of \$34.12; and
- § 7,381,580 shares of our common stock issuable upon the conversion of our outstanding convertible 2.5% senior notes, at an initial conversion price of \$27.09 per share, the impact of which may be reduced by the delivery to us of 4,486,025 shares of our common stock upon our exercise of convertible bond hedges, at an exercise price of \$27.09 per share.

Except as otherwise noted, all information in this prospectus supplement assumes no exercise by the underwriters of their option to purchase additional shares of common stock from us.

Table of Contents

RISK FACTORS

An investment in the shares of common stock offered hereby involves a high degree of risk. When determining whether or not to purchase our common stock, you should carefully consider the risks and uncertainties described in this prospectus supplement, the accompanying prospectus, any related free writing prospectus, and the documents incorporated by reference herein and therein, including the risks and uncertainties described in our Annual Report on Form 10-K for the year ended December 31, 2014 and our Quarterly Report on Form 10-Q for the quarterly period ended June 30, 2015, each which are incorporated by reference into this prospectus supplement, as the same may be updated from time to time by our future filings under the Exchange Act (including by the filing of Current Reports on Form 8-K). If any of these risks were to occur, our business, financial condition or results of operations would likely suffer. In that event, the value of our common stock could decline, and you could lose all or part of your investment. The risks and uncertainties we describe are not the only ones we face. Additional risks not presently known to us or that we currently deem immaterial may also impair our business operations and trading price of our common stock.

This prospectus supplement also contains forward-looking statements that involve risks and uncertainties. Our actual results could differ materially from those anticipated in these forward-looking statements as a result of certain factors, including the risks faced by us described below and elsewhere in this prospectus. See "Cautionary Note Regarding Forward-Looking Statements" for information relating to these forward-looking statements.

Risks Relating to This Offering

Management will have broad discretion as to the use of the proceeds from this offering, and we may not use the proceeds effectively.

We plan to use a portion of the net proceeds from this offering for general corporate purposes. This means that our management will have broad discretion in the application of the net proceeds from this offering. If we do not invest or apply the net proceeds from this offering in ways that enhance our financial returns, our stock price could decline.

Completion of this offering is not contingent upon consummation of the Acquisition, and consummation of the Acquisition is not contingent on the completion of this offering. Moreover, the Acquisition and the Debt Financing could be completed on significantly different terms than those we currently contemplate. Our stock price could also decline in the event we do not complete the Acquisition or the Debt Financing on the terms or on the timeframe currently contemplated, or if we do not complete it at all. Such a decline in stock price could occur regardless of the reason for the delay or failure to complete the Acquisition.

Future sales of our common stock or other equity-linked securities may cause our stock price to decline.

Sales of a substantial number of shares of our common stock in the public market, sales by us of other equity-linked securities in the public or private markets, or the perception that these sales might occur could significantly reduce the market price of our common stock and impair our ability to raise adequate capital through the sale of additional equity or equity-linked securities. If we or our existing stockholders sell, or if the market believes we or our existing stockholders will sell, substantial amounts of our common stock or equity-linked securities, the trading price of our common stock could decline significantly.

Table of Contents**USE OF PROCEEDS**

We estimate that the net proceeds of this offering will be approximately \$189.6 million, based on the public offering price of \$63.75 per share and after deducting underwriting discounts and commissions and estimated offering expenses payable by us, without giving effect to any exercise by the underwriters of their option to purchase additional shares.

We intend to use the net proceeds from this offering (1) for the expansion and diversification of our product portfolio through the in-license or purchase of additional pharmaceutical products or companies, such as CBR, (2) to repay and terminate our existing secured term loan facility (the Existing Credit Facility), (3) to pay various fees and expenses incurred in connection with the Acquisition and the Debt Financing, and (4) for general corporate purposes.

If the underwriters exercise their option to purchase additional shares, we intend to use the net proceeds therefrom for general corporate purposes, which may include repayment of indebtedness, working capital, future acquisitions or other business opportunities. Completion of this offering is not contingent upon consummation of the Acquisition, and consummation of the Acquisition is not contingent on the completion of this offering. If the Acquisition is not consummated for any reason, we will use the net proceeds from this offering for general corporate purposes, which may include repayment of indebtedness, working capital, future acquisitions or other business opportunities.

The following table sets forth the estimated sources and uses of funds in connection with the Transactions. The actual sources and uses of funds may vary from the estimated sources and uses of funds in the table and accompanying footnotes set forth below. You should read the following together with the information included under the headings "Prospectus Summary Financing Transactions" included elsewhere in this prospectus supplement.

Sources of Funds		Uses of Funds	
(in millions)			
New Credit Facility ⁽¹⁾	\$ 350.0	Acquisition consideration	\$ 682.8
Unsecured debt financing ⁽²⁾	450.0	Refinancing of Existing Credit Facility ⁽³⁾	331.4
This offering	189.6	Estimated fees and expenses ⁽⁴⁾	40.3
Cash generated from the sale of marketable securities	64.9		
Total sources of funds	\$ 1,054.5	Total uses of funds	\$ 1,054.5

(1) See "Description of Certain Indebtedness New Credit Facility" for a description of the anticipated terms of the New Credit Facility, which we expect to enter into contemporaneously with the closing of the Acquisition. Entry into the New Credit Facility is contingent upon, among other customary conditions, the closing of the Acquisition, but is not contingent upon the closing of this offering. To the extent aggregate commitments under our New Credit Facility are less than \$350.0 million, we may use up to \$50.0 million of cash on hand to finance the Transactions.

(2) Consists of principal amount of bridge loans under the Bridge Loan Facility, the principal amount of senior unsecured notes that we may issue in lieu of bridge loans, or a combination of the foregoing. See "Description of Certain Indebtedness Bridge Loan Facility" for a description of the anticipated terms of the Bridge Loan Facility, which, unless we reduce the committed amount of the Bridge Loan Facility to zero through the issuance of senior unsecured notes and/or equity (including this offering of common stock), we expect to enter

into contemporaneously with the closing of the Acquisition. Entry into the Bridge Loan Facility is contingent upon, among other customary conditions, the closing of the Acquisition, but is not contingent upon the closing of this offering.

(3)

Represents the repayment of existing indebtedness outstanding under the Existing Credit Facility, including the payment of accrued interest and a 2% prepayment premium. In November 2014, we borrowed \$340.0 million under the Existing Credit

S-8

Table of Contents

Facility to fund a portion of the purchase price of our acquisition of Lumara Health Inc. and its subsidiaries. At June 30, 2015, the carrying value of these outstanding borrowings, net of unamortized original issue costs and other lender fees and expenses, was \$312.4 million. The Existing Credit Facility bears interest, at our option, at either the Eurodollar rate plus a margin of 6.25% or the prime rate plus a margin of 5.25%, subject to certain interest rate floors. As of June 30, 2015, the stated interest rate was 7.25%. The Existing Credit Facility matures on November 12, 2020, except that the Existing Credit Facility will mature on September 30, 2018 if: (a) more than \$25.0 million in aggregate principal amount of our convertible 2.5% senior notes remain outstanding and not converted to common stock or refinanced and replaced with debt that matures following, and has no amortization prior to, May 12, 2021; and (b) the aggregate principal amount of the Existing Credit Facility (including all undrawn incremental commitments) is greater than \$50.0 million on and as of such date. If we voluntarily repay all amounts outstanding under the Existing Credit Facility on or before November 12, 2015, we will incur a 2% prepayment premium. An affiliate of Jefferies LLC is administrative agent and collateral agent and a lender under the Existing Credit Facility.

(4)

Consists of our estimate of fees and expenses associated with the Acquisition and the Debt Financing, including commitment fees, underwriting fees, discounts and commissions, arranging fees and other financing fees and other transaction costs and advisory and professional fees.

Table of Contents

CAPITALIZATION

The following table sets forth our cash, cash equivalents and investments and our capitalization as of June 30, 2015 as follows:

§	on an actual basis;
§	an as adjusted basis for this offering to give effect to the sale by us of 3,150,000 shares of common stock at a public offering price of \$63.75 per share, after deducting underwriting discounts and commissions and estimated offering expenses payable by us, assuming no exercise of the underwriters' option to purchase additional shares and that the net proceeds from this offering are held as cash and cash equivalents; and
§	on a pro forma as adjusted basis to give effect to the Transactions.

This offering is not contingent upon consummation of the Acquisition or our entering into the Debt Financing. As a result, we cannot assure you that these transactions will be consummated or, if consummated, that they will be consummated on the terms we currently expect.

You should read this table in conjunction with "Use of Proceeds" appearing elsewhere in this prospectus supplement, as well as with "Management's Discussion and Analysis of Financial Condition and Results of Operations" and our audited consolidated financial statements and the related notes thereto, incorporated by reference into this prospectus supplement from our Annual Report on Form 10-K for the year ended December 31, 2014 and our unaudited condensed consolidated financial statements and the related notes

Table of Contents

thereto, incorporated by reference into this prospectus supplement from our Quarterly Report on Form 10-Q for the quarterly period ended June 30, 2015.

	As of June 30, 2015		
	Actual	As Adjusted for	Pro Forma
	(in thousands, except share and per share data)	this Offering	As Adjusted for the Transactions
Cash, cash equivalents and investments⁽¹⁾	\$ 398,408	\$ 588,016	\$ 333,454
Long-term debt, net of discount, including current portion:			
Existing Credit Facility, net of discount	\$ 312,386	\$ 312,386	\$
Convertible 2.5% senior notes, net of discount	170,817	170,817	170,817
New Credit Facility, net of discount ⁽¹⁾			341,250
Unsecured debt financing, net of discount ⁽²⁾			434,250
Total long-term debt, net of discount	483,203	483,203	946,317
Stockholders' equity:			
Preferred stock, par value \$0.01 per share; 2,000,000 shares authorized, actual, as adjusted and pro forma as adjusted; no shares issued or outstanding, actual, as adjusted and pro forma as adjusted			
Common stock, par value \$0.01 per share; 117,500,000 shares authorized, 30,868,011 shares issued and outstanding, actual; 117,500,000 shares authorized, 34,018,011 shares issued and outstanding, as adjusted and pro forma as adjusted	309	340	340
Additional paid-in capital	1,000,901	1,190,478	1,190,478
Accumulated other comprehensive loss	(3,948)	(3,948)	(3,948)
Accumulated deficit	(284,281)	(284,281)	(302,776)
Total stockholders' equity	712,981	902,589	884,094
Total capitalization	\$ 1,196,184	\$ 1,385,792	\$ 1,830,411

- (1) See "Description of Certain Indebtedness – New Credit Facility" for a description of the anticipated terms of the New Credit Facility, which we expect to enter into contemporaneously with the closing of the Acquisition. Entry into the New Credit Facility is contingent upon, among other customary conditions, the closing of the Acquisition, but is not contingent upon the closing of this offering. To the extent aggregate commitments under our New Credit Facility are less than \$350.0 million, we may use up to \$50.0 million of cash on hand to finance the Transactions.

(2)

Edgar Filing: AMAG PHARMACEUTICALS INC. - Form 424B5

Consists of principal amount of bridge loans under the Bridge Loan Facility, the principal amount of senior unsecured notes that we may issue in lieu of bridge loans, or a combination of the foregoing. See "Description of Certain Indebtedness – Bridge Loan Facility" for a description of the anticipated terms of the Bridge Loan Facility, which, unless we reduce the committed amount of the Bridge Loan Facility to zero through the issuance of senior unsecured notes and/or equity (including this offering), we expect to enter into contemporaneously with the closing of the Acquisition. Entry into the Bridge Loan Facility is contingent upon, among other customary conditions, the closing of the Acquisition, but is not contingent upon the closing of this offering.

The number of shares of our common stock in the table above excludes:

- § 2,807,844 shares of our common stock issuable upon the exercise of outstanding stock options issued under our equity compensation plans, at a weighted average exercise price of \$29.53 per share;
- § 728,180 shares of our common stock reserved for issuance in connection with restricted stock units issued under our equity compensation plans;
- § an additional 4,309,493 shares of our common stock available for future grants under our equity compensation plans;

S-11

Table of Contents

§

7,381,581 shares of our common stock issuable upon the exercise of outstanding warrants, at an initial exercise price of \$34.12; and

§

7,381,580 shares of our common stock issuable upon the conversion of our outstanding convertible 2.5% senior notes, at an initial conversion price of \$27.09 per share, the impact of which may be reduced by the delivery to us of 4,486,025 shares of our common stock upon our exercise of convertible bond hedges, at an exercise price of \$27.09 per share.

All applicable share, per share and related information in this prospectus supplement speaks as of June 30, 2015, unless otherwise indicated.

S-12

DIVIDEND POLICY

We have never declared or paid a cash dividend on our common stock. We currently anticipate that we will retain all of our earnings for use in the development of our business and do not anticipate paying any cash dividends in the foreseeable future. Payment of future dividends, if any, will be at the discretion of our board of directors and will depend on our financial condition, results of operations, capital requirements, restrictions contained in current or future financing instruments and other factors our board of directors deems relevant.

PRICE RANGE OF COMMON STOCK

Our common stock trades on The NASDAQ Global Select Market (NASDAQ), under the trading symbol "AMAG." The following table shows the high and low sale prices per share of our common stock as reported on NASDAQ for the periods indicated:

	High	Low
Year ended December 31, 2015		
Third quarter (through July 30, 2015)	\$ 77.73	\$ 62.23
Second quarter	\$ 74.21	\$ 50.32
First quarter	\$ 59.29	\$ 38.25
Year ended December 31, 2014		
Fourth quarter	\$ 44.81	\$ 29.76
Third quarter	\$ 33.57	\$ 17.79
Second quarter	\$ 20.88	\$ 16.49
First quarter	\$ 24.93	\$ 18.52
Year ended December 31, 2013		
Fourth quarter	\$ 28.42	\$ 18.94
Third quarter	\$ 27.00	\$ 20.35
Second quarter	\$ 25.67	\$ 18.46
First quarter	\$ 23.98	\$ 15.00

The last reported sale price of our common stock on NASDAQ on July 30, 2015 was \$64.77 per share. As of July 30, 2015, we had approximately 110 holders of record of our common stock.

Table of Contents

DESCRIPTION OF OUR COMMON STOCK

This section describes the general terms of our common stock. For more detailed information, a holder of our common stock should refer to our certificate of incorporation, our by-laws and our rights agreement with respect to our preferred share purchase rights plan, copies of which are filed with the SEC as exhibits to the registration statement of which this prospectus supplement is a part.

We are authorized to issue up to 117,500,000 shares of common stock, \$0.01 par value per share. As of July 30, 2015, approximately 30,928,047 shares of common stock were outstanding.

Holders of our common stock are entitled to one vote per share and vote together as a single class on all matters to be voted on by our stockholders. Pursuant to our certificate of incorporation, there are no cumulative voting rights in the election of directors. The approval of corporate actions may also require the approval of the holders of any series of our preferred stock. See "Description of Our Preferred Stock."

Our common stock will be the only type of our capital stock entitled to vote in the election and removal of directors and other matters presented to our stockholders from time to time, unless we issue voting preferred stock or our certificate of incorporation or the law requires otherwise.

Our common stockholders will be entitled to receive dividends and distributions declared by our board of directors to the extent permitted by outstanding series of preferred stock and by our certificate of incorporation. If a dividend is declared, it will be distributed pro rata to our common stockholders on a per share basis.

If we are liquidated or dissolved, our common stockholders will be entitled to receive our assets and funds available for distribution to common stockholders in proportion to the number of shares they hold. Our common stockholders may not receive any assets or funds until our creditors have been paid in full and the preferential or participating rights of our preferred stockholders, if any, have been satisfied.

Holders of our common stock will not have any preemptive, subscription or conversion rights with respect to shares of our common stock. We may issue additional shares of our common stock, if authorized by our board of directors, without the common stockholders' approval, unless required by Delaware law or a stock exchange on which our securities are traded. The issuance of additional shares could have the effect of diluting any earnings per share and the book value per share of outstanding shares of common stock. If we receive the appropriate payment, shares of our common stock that we issue will be fully paid and nonassessable. There are no redemption or sinking fund provisions applicable to our common stock.

Description of Certain Provisions of Delaware Law and Our Certificate of Incorporation and By-Laws

We are organized as a Delaware corporation. The following is a summary of our certificate of incorporation and by-laws and certain provisions of the Delaware General Corporation Law (the DGCL). Because it is a summary, it does not contain all the information that may be important to you. If you want more information, you should read our entire certificate of incorporation and by-laws, copies of which are filed with the SEC as exhibits to the registration statement of which this prospectus supplement is a part.

Classification of Directors

Our by-laws provide that, except as otherwise required by specific provisions of the certificate of incorporation relating to the rights of holders of any class or series of preferred stock to elect additional directors under specified circumstances, the number of our directors may be fixed from time to time by a resolution adopted by a majority of our board of directors but must not be less than one. Our board of directors is not classified into classes. A director may be removed, with or without cause, by the holders of a majority of the shares then entitled to vote at an election of directors, subject to the rights of any series of preferred stock then outstanding.

Table of Contents

Meetings of Stockholders

Except as otherwise required by law and subject to the rights of holders of any class or series of preferred stock, special meetings of the stockholders may only be called by our President or by our board of directors. No business other than that stated in the notice of meeting may be transacted at any special meeting of stockholders. Our by-laws limit the business that may be conducted at an annual meeting of stockholders to those matters properly brought before the meeting.

Limitation of Liability and Indemnification

Our certificate of incorporation provides that we shall indemnify our directors and officers to the fullest extent that Delaware law permits. Our certificate of incorporation also provides that we, by action of our board of directors, may provide indemnification to our employees and agents with the same scope and effect as the indemnification of our officers and directors. Delaware law permits a corporation to indemnify any director, officer, employee or agent made or threatened to be made a party to any pending or completed proceeding if the person acted in good faith and in a manner that the person reasonably believed to be in the best interests of the corporation and, with respect to any criminal proceeding, had no reasonable cause to believe that his or her conduct was unlawful.

Our certificate of incorporation limits the liability of our directors to the fullest extent permitted by the DGCL. Delaware law provides that directors will not be personally liable for monetary damages for breach of their fiduciary duties as directors, except liability for:

- § any breach of their duty of loyalty to the corporation or its stockholders;
- § acts or omissions not in good faith or which involve intentional misconduct or a knowing violation of law;
- § unlawful payments of dividends or unlawful stock repurchases or redemptions; or
- § any transaction from which the director derived an improper personal benefit.

The effect of this provision may be to reduce the likelihood of derivative litigation against directors for breach of their duty of care, even though the action, if successful, might otherwise have benefited us and our stockholders. This provision has no effect on any non-monetary remedies that may be available to us or our stockholders, nor does it relieve us or our officers or directors from compliance with federal or state securities laws.

Each of our directors and executive officers is party to an indemnification agreement that provides specific contractual assurance that the indemnification protection promised by certificate of incorporation and by-laws will be available.

As permitted by our certificate of incorporation, we have purchased and maintain insurance on behalf of our directors and officers for any expense, liability or loss incurred by them arising out of their actions in that capacity if we would have the power to indemnify such person against such expense, liability or loss under the DGCL.

Insofar as indemnification for liabilities arising under the Securities Act may be permitted to directors, officers or persons controlling the registrant pursuant to the foregoing provisions, the registrant has been informed that in the opinion of the SEC such indemnification is against public policy and is therefore unenforceable.

Undesignated Preferred Stock

Our certificate of incorporation provides for 2,000,000 authorized shares of preferred stock (of which our board has designated 45,000 shares as Series A Junior Participating Preferred Stock). The existence of authorized but unissued shares of preferred stock may enable our board of directors to render more difficult or to discourage an attempt to obtain control of us by means of a merger, tender offer, proxy contest or otherwise. For example, if in the due exercise of its fiduciary obligations, our board of directors were to determine that a takeover proposal is not in the best interests of our stockholders, our board of directors

Table of Contents

could cause shares of preferred stock to be issued without stockholder approval in one or more private offerings or other transactions that might dilute the voting or other rights of the proposed acquirer or insurgent stockholder or stockholder group. In this regard, our certificate of incorporation grants our board of directors broad power to establish the rights and preferences of authorized and unissued shares of preferred stock. The issuance of shares of preferred stock could decrease the amount of earnings and assets available for distribution to holders of shares of common stock. The issuance may also adversely affect the rights and powers, including voting rights, of these holders and may have the effect of delaying, deterring or preventing a change in control of us.

Section 203 of the Delaware General Corporation Law

Section 203 of the DGCL prohibits a defined set of transactions between a Delaware corporation, such as us, and an "interested stockholder." An interested stockholder is defined as a person who, together with any affiliates or associates of such person, beneficially owns, directly or indirectly, 15% or more of the outstanding voting stock of a Delaware corporation. This provision may prohibit business combinations between an interested stockholder and a corporation for a period of three years after the date the interested stockholder becomes an interested stockholder. The term "business combination" is broadly defined to include mergers, consolidations, sales or other dispositions of assets having a total value in excess of 10% of the consolidated assets of the corporation, and some other transactions that would increase the interested stockholder's proportionate share ownership in the corporation.

This prohibition is effective unless:

- § either the business combination or the transaction that resulted in the interested stockholder becoming an interested stockholder is approved by our board of directors prior to the time the interested stockholder becomes an interested stockholder;
- § the interested stockholder owns at least 85% of our voting stock, other than stock held by directors who are also officers or by qualified employee stock plans, upon completion of the transaction in which it becomes an interested stockholder; or
- § the business combination is approved by a majority of our board of directors and by the affirmative vote of 66²/₃% of the outstanding voting stock that is not owned by the interested stockholder.

In general, the prohibitions do not apply to business combinations with persons who were interested stockholders prior to the corporation becoming subject to Section 203.

Stock Exchange Listing

Our common stock is listed on The NASDAQ Global Select Market. The trading symbol for our common stock is "AMAG."

Transfer Agent and Registrar

American Stock Transfer & Trust Company is the transfer agent and registrar for our common stock.

Table of Contents

DESCRIPTION OF OUR PREFERRED STOCK

This section describes the general terms and provisions of our preferred stock including our Series A Junior Participating Preferred Stock. We will file a copy of the certificate of designation that contains the terms of each new series of preferred stock with the SEC each time we issue a new series of preferred stock, and these certificates of designation will be incorporated by reference into the registration statement of which this prospectus supplement is a part. Each certificate of designation will establish the number of shares included in a designated series and fix the designation, powers, privileges, preferences and rights of the shares of each series as well as any applicable qualifications, limitations or restrictions. A holder of our preferred stock should refer to the applicable certificate of designation, our certificate of incorporation and the applicable prospectus supplement (and any related free writing prospectus that we may authorize to be provided to you) for more specific information.

We are authorized to issue up to 2,000,000 shares of preferred stock, \$0.01 par value per share, in multiple series, subject to limitations provided in our certificate of incorporation. To date, our board of directors has designated 45,000 of the 2,000,000 authorized shares of preferred stock as Series A Junior Participating Preferred Stock, which series is described in greater detail below under " Preferred Share Purchase Rights Plan." As of July 30, 2015, no other series has been designated and no shares of our preferred stock were outstanding.

With respect to each new series of our preferred stock, our board of directors has the authority to fix, among other things, the following terms:

- § the designation of the series;
- § the number of shares within the series;
- § whether the dividends are cumulative and, if cumulative, the dates from which dividends are cumulative;
- § the rate of any dividends, any conditions upon which dividends are payable, and the dates of payment of dividends;
- § whether the shares are redeemable, the redemption price and the terms of redemption;
- § the amount payable to a holder for each share owned if we are dissolved or liquidated;
- § whether the shares are convertible or exchangeable, the price or rate of exchange, and the applicable terms and conditions;
- § any restrictions on issuance of shares in the same series or any other series;
- § the voting rights, if any, of the shares of the series;
- § the provisions for a sinking fund, if any; and
- § any listing of the preferred stock on any securities exchange or market.

Holders of our preferred stock will not have preemptive rights with respect to shares of our preferred stock. In addition, rights with respect to shares of our preferred stock will be subordinate to the rights of our general creditors. If we receive the appropriate payment, shares of our preferred stock that we issue will be fully paid and nonassessable.

Edgar Filing: AMAG PHARMACEUTICALS INC. - Form 424B5

Preferred Share Purchase Rights Plan. Each outstanding share of our common stock has attached to it one preferred share purchase right, which we refer to as a right. Each right entitles the registered holder of our common stock to purchase from us one one-thousandth of a share of Series A Junior Participating Preferred Stock, which we refer to as participating preferred shares, at a price of \$80 per one one-thousandth of a participating preferred share, subject to adjustment. Each one one-thousandth of a share of participating preferred shares has designations and powers, preferences and rights, and the qualifications, limitations and restrictions that make its value approximately equal to the value of a share of our common stock at the end of the ten-year term of the rights. The description and terms of the rights are set forth in a Rights

S-17

Table of Contents

Agreement, dated as of September 4, 2009, between us and American Stock Transfer & Trust Company, LLC, as rights agent, as amended on February 11, 2014, May 10, 2012 and September 26, 2014, or the rights agreement, which is incorporated by reference as an exhibit into the registration statement of which this prospectus supplement is a part.

Until the distribution date described below, we will not issue separate certificates evidencing the rights. Until that date, the rights will be evidenced, with respect to any common stock certificate, by that common stock certificate. The rights will detach from the common stock and a distribution date will occur upon the earlier of the following dates:

§
the 10th calendar day following the date of a public announcement that an "acquiring person," which may include an entity or group of affiliated or associated persons, has acquired beneficial ownership of 4.99% or more of our outstanding common stock; or

§
the 10th business day following the commencement of, or announcement of an intention to make, a tender offer or exchange offer which would result in the beneficial ownership by an "acquiring person" of 4.99% or more of our outstanding common stock.

Notwithstanding the foregoing, with respect to any person who beneficially owns 4.99% or more of our outstanding shares of common stock as of September 29, 2014, the distribution date will not occur unless such person has acquired beneficial ownership of shares of common stock representing an additional ¹/₄% of our outstanding shares of common stock. Our board of directors may postpone the distribution date by determining a later distribution date before the time any person or group an acquiring person.

The term "acquiring person" does not include us, any of our subsidiaries, any of our or our subsidiaries' employee benefit or compensation plans or any entity holding our common stock for or under any of our or our subsidiaries' employee benefit or compensation plans. In addition, a person who would otherwise be an acquiring person will not be considered an acquiring person if our board of directors determines in good faith that such person inadvertently became the beneficial owner (as defined in the rights agreement, which is consistent with how ownership is defined under Section 382 of the Internal Revenue Code) of 4.99% or more of our common stock and such person divests itself, as promptly as practicable following written notice from us, of beneficial ownership of a sufficient number of shares of our common stock so that it would no longer otherwise qualify as an acquiring person or, in the case of any derivative securities underlying a transaction entered into by such person or otherwise acquired by such person, such person terminates such transaction or otherwise disposes of such derivative securities so that such person would no longer be an "acquiring person," then such person shall not be considered an "acquiring person."

In addition, except under limited circumstances, no person or entity shall become an acquiring person as the result of our acquisition of our common stock that, by reducing the number of shares outstanding, increases the proportionate number of shares beneficially owned by such person or entity to 4.99% or more of our outstanding common stock; *provided, however*, that if a person shall become the beneficial owner of 4.99% or more of our outstanding common stock by reason of our acquisition of our common stock and shall, following written notice from us, or public disclosure by us of such share purchases by us, become the beneficial owner of any additional common stock without our prior consent and shall then beneficially own more than 4.99% of our common stock, then outstanding, then such person shall be deemed to be an "acquiring person."

The rights agreement provides that, until the distribution date, or earlier redemption or expiration of the rights, the rights will be transferred only with our common stock. The rights will be evidenced, with respect to any common stock certificate outstanding as of September 17, 2009, by that common stock certificate with a summary of the rights attached to it. Until the distribution date, or earlier redemption or expiration of the rights, new common stock certificates issued after September 17, 2009 upon transfer or new issuances of common stock will contain a notation incorporating the rights agreement by reference. Until the distribution date, the surrender for transfer of any certificates for common stock, even without a summary of

Table of Contents

the rights attached to it, also will constitute the transfer of the rights associated with the common stock represented by that certificate. As soon as practicable after the distribution date, separate certificates evidencing the rights will be mailed to holders of record of our common stock as of the close of business on the distribution date, and the separate right certificates alone will evidence the rights.

The rights are not exercisable until the distribution date. The rights as modified on September 26, 2014 will expire at the earliest of (i) March 31, 2017, (ii) the time at which the rights are redeemed or exchanged as described below, (iii) the effective date of the repeal of Section 382 if the Internal Revenue Code or any successor statute if our board of directors determines that the shareholder rights plan is no longer necessary or desirable for the preservation of tax benefits, (iv) the first day of a taxable year to which our board of directors determines that no tax benefits may be carried forward or (v) September 26, 2015 if stockholder approval of the amendment to the rights plan executed on September 26, 2014 has not been obtained by or on such date.

The purchase price payable for the participating preferred shares, and the number of participating preferred shares or other securities or property issuable, upon exercise of the rights, as well as the number of rights outstanding, are subject to adjustment from time to time to prevent dilution in the following circumstances:

- §
a stock dividend on, or a subdivision, combination or reclassification of, the participating preferred shares;
- §
upon the grant to holders of the participating preferred shares of certain rights or warrants to subscribe for or purchase participating preferred shares at a price, or securities convertible into participating preferred shares with a conversion price, less than the then current market price of the participating preferred shares; or
- §
upon the distribution to holders of the participating preferred shares of evidences of indebtedness or assets (excluding regular periodic cash dividends paid out of earnings or retained earnings or dividends payable in participating preferred shares) or of subscription rights or warrants (other than those referred to above).

The exercise of rights to purchase participating preferred shares is at all times subject to the availability of a sufficient number of authorized but unissued participating preferred shares.

The number of outstanding rights and the number of one one-thousandths of a participating preferred share issuable upon exercise of each right are also subject to adjustment in the event of a dividend or other distribution on the common stock payable in common stock or subdivisions, consolidations or combinations of our common stock occurring, in any of those cases, before the distribution date.

Participating preferred shares purchasable upon exercise of the rights will be non-redeemable and rank junior to any other series of our preferred stock. Each participating preferred share would be entitled to receive a minimum preferential quarterly dividend payment of \$1.00 per share but would be entitled to receive an aggregate dividend of 1,000 times the dividend declared per share of our common stock. If there is a liquidation, the holders of the participating preferred shares will be entitled to a minimum preferential liquidation payment of \$250 per share and will be entitled to an aggregate payment of 1,000 times the payment made per share of our common stock. Each participating preferred share will have 1,000 votes, voting together with our common stock. Finally, in the event of any merger, consolidation or other transaction in which our common shares are exchanged, each participating preferred share will be entitled to receive 1,000 times the amount of consideration received per common share. These rights are protected by customary anti-dilution provisions.

Because of the nature of the dividend, liquidation and voting rights of the participating preferred shares, the value of the one one-thousandth interest in a participating preferred share purchasable upon exercise of each right should approximate the value of one share of our common stock.

Table of Contents

In the event that any person or group of affiliated or associated persons becomes an "acquiring person," proper provision shall be made so that each holder of a right, other than rights beneficially owned by the "acquiring person" and its associates and affiliates (which will thereafter be void), will for a sixty (60) day period have the right to receive upon exercise that number of common shares having a market value of two times the exercise price of the right (or, if such number of shares is not and cannot be authorized, we may issue participating preferred shares, cash, debt, stock or a combination thereof in exchange for the rights). This right will terminate sixty (60) days after the date on which the rights become nonredeemable (as described below), unless there is an injunction or similar obstacle to exercise of the rights, in which event this right will terminate sixty (60) days after the date on which the rights again become exercisable.

If we are acquired in a merger or other business combination transaction or 50% or more of our consolidated assets or earning power are sold to an "acquiring person", its associates or affiliates or certain other persons in which such persons have an interest, proper provision will be made so that each holder of a right will thereafter have the right to receive, upon the exercise thereof at the then current exercise price of the right, that number of shares of common stock of the acquiring company that at the time of such transaction will have a market value of two times the exercise price of the right.

At any time after an "acquiring person" becomes an "acquiring person" and prior to the acquisition by such "acquiring person" of 50% or more of our outstanding common shares, our board of directors may exchange the rights (other than rights owned by such person or group that have become void), in whole or in part, at an exchange ratio of one common share per right (or, in lieu of the common shares, at our election, we may issue cash, debt, stock or a combination thereof in exchange for the rights), subject to adjustment.

With specified exceptions, no adjustments in the purchase price for the preferred shares will be required until cumulative adjustments require an adjustment of at least 1% in the purchase price. No fractional participating preferred shares will be issued, other than fractions that are integral multiples of one one-thousandth of a participating preferred share, which may, at our election, be evidenced by depositary receipts. Instead of issuing fractional participating preferred shares, we will make an adjustment in cash based on the closing price of the participating preferred shares on the last trading day immediately before the date of exercise.

At any time prior to the earliest of (i) the day that a person has become an "acquiring person" or (ii) September 17, 2019, our board of directors may redeem the rights in whole, but not in part, at a price of \$0.01 per right, which may be paid in cash, common shares or any other consideration deemed appropriate by our board of directors. The rights become nonredeemable on the day that a person has become an "acquiring person". Immediately upon any redemption of the rights, the right to exercise the rights will terminate and the only right of the holders of rights will be to receive the redemption price.

Until a right is exercised, the holder of the right, in the capacity of a holder, will have no rights as a stockholder of ours, including, without limitation, the right to vote or to receive dividends. Although the distribution of the rights will not be taxable to stockholders or to us, stockholders may, depending upon the circumstances, recognize taxable income in the event that the rights become exercisable for our common stock or other consideration, or for common stock of any company acquiring us.

The terms of the rights generally may be amended by our board of directors without the consent of the holders of the rights, except that from and after the time that the rights are no longer redeemable, no such amendment may adversely affect the interests of the holders of the rights (excluding the interests of any "acquiring person" and any group of affiliated or associated persons).

The rights have certain anti-takeover effects. The rights will cause substantial dilution to a person or group that attempts to acquire us on terms not approved by our board of directors. The rights should not interfere with any merger or other business combination approved by our board of directors since the rights may be amended to permit such acquisition or redeemed by us at the redemption price prior to the earliest of (i) the time that a person or group has acquired beneficial ownership of 4.99% or more of our common shares or (ii) September 17, 2019.

Transfer Agent and Registrar. We currently plan to retain American Stock Transfer & Trust Company as the registrar and transfer agent of any series of our preferred stock.

Table of Contents

DESCRIPTION OF CERTAIN INDEBTEDNESS

For information concerning our existing indebtedness, see "Management's Discussion and Analysis of Financial Condition and Results of Operations" and our consolidated financial statements and accompanying notes in our Annual Report on Form 10-K for the year ended December 31, 2014 and Quarterly Report on Form 10-Q for the quarterly period ended June 30, 2015, which are incorporated by reference into this prospectus supplement.

The obligations of the Lenders to provide the New Credit Facility and the Bridge Facility are subject to a number of conditions, including, among others: (1) consummation of the Acquisition in accordance with the related Stock Purchase Agreement (without giving effect to any amendments, modifications or waivers to the Stock Purchase Agreement that are materially adverse to the interests of the Joint Lead Arrangers or the Lenders without the prior written consent of the Joint Lead Arrangers), (2) a 15 business day marketing period (with customary exclusions for holidays) for the Lead Arrangers to syndicate the New Credit Facility, (3) using our best efforts to cause the Notes to be issued and sold, (4) since the date of the Commitment Letter, there has been no material adverse effect on the CBR business to be acquired, (5) delivery of certain customary historical and pro forma financial statements with respect to us and the CBR business to be acquired, (6) delivery of definitive loan documentation and certain customary closing documents, and (7) the accuracy of certain customary representations and warranties. The New Credit Facility and the Bridge Facility, to the extent entered into or issued, will contain affirmative and negative covenants which will limit our ability to conduct certain activities or incur additional indebtedness, among other things.

There can be no assurance that the Debt Financing will be consummated, or that it will be consummated on terms we currently contemplate and that we describe below.

New Credit Facility

General

On June 29, 2015, we received a commitment from the Joint Lead Arrangers to provide us with up to \$350.0 million of borrowings under the New Credit Facility with terms that are consistent with an agreed to term sheet. We intend to enter into the New Credit Facility contemporaneously with the closing of the Acquisition. The following is a summary description of certain anticipated terms of the New Credit Facility based on the agreed-to term sheet. The terms of the credit agreement and related documentation for the New Credit Facility, however, are under discussion and accordingly, their definitive terms may vary from those described below, particularly to the extent certain agreed-to "market flex" provisions are exercised by the Joint Lead Arrangers. The borrowings under the New Credit Facility will be guaranteed by each of our direct and indirect wholly owned domestic restricted subsidiaries (the Guarantors) subject to certain exceptions. In addition, the New Credit Facility provides that we may incur additional term loans and/or revolving loan commitments secured by the same assets securing the New Credit Facility in certain instances.

Interest

Borrowings under the New Credit Facility will bear interest at a to-be-determined floating annual rate. The term loans under the New Credit Facility will be issued on the closing date of the New Credit Facility at a price below their principal amount.

Collateral and Security

The New Credit Facility will be secured by a first priority perfected lien on and security interest in substantially all of our and the Guarantors' current and future assets, and a pledge of all of the capital stock of the Guarantors and other domestic subsidiaries and 65% of the voting stock (and 100% of the non-voting stock) of each first-tier foreign subsidiary of us and the Guarantors, other than, in each case, certain customary excluded assets.

Table of Contents

Covenants

The New Credit Facility will not include any financial maintenance covenants.

The New Credit Facility will contain customary negative covenants, including, but not limited to, negative covenants that limit: (1) the incurrence of indebtedness and liens, (2) sale and leaseback transactions, (3) investments and acquisitions, (4) asset sales, (5) mergers, acquisitions, consolidations, liquidations and dissolutions, (6) dividends and other payments in respect of equity interests and other restricted payments, (7) transactions with affiliates, and (8) payments in respect of subordinated indebtedness, in each case, subject to customary exceptions, qualifications and baskets.

The New Credit Facility will contain customary affirmative covenants, including, but not limited to: (1) delivery of annual and quarterly financial statements and "Management's Discussion and Analysis of Financial Condition and Results of Operations," (2) annual projections, (3) notices of default, litigation and other events that, in each case, would result in a material adverse effect, (4) maintenance of business and properties, (5) maintenance of insurance and (6) payment and performance of obligations and taxes, in each case, subject to customary exceptions, qualifications and baskets.

Prepayments

Optional prepayments of borrowings under the New Credit Facility will be permitted at any time, in minimum principal amounts to be agreed upon and subject to a prepayment premium in certain instances.

With certain exceptions, the New Credit Facility will contain mandatory repayment provisions with respect to the proceeds from the incurrence of indebtedness and certain dispositions and condemnations and mandatory repayment of a percentage of "Excess Cash Flow" (to be defined in the New Credit Facility), with step downs of this percentage if a specified first lien net leverage ratio does not exceed levels to be agreed less certain voluntary prepayments.

Events of Default

The New Credit Facility will provide that, upon the occurrence of "Events of Default" (to be defined in the New Credit Facility), our obligations thereunder may be accelerated. Such events of default will include payment defaults to the lenders, material inaccuracies of representations and warranties, covenant defaults, cross-defaults to other material indebtedness, voluntary and involuntary bankruptcy proceedings, material money judgments, certain change of control events and other customary events of default.

Bridge Loan Facility

General

On June 29, 2015, we received a commitment from the Joint Lead Arrangers to provide us with up to \$450.0 million of borrowings under a Bridge Loan Facility with terms that are consistent with an agreed-to term sheet. Unless we reduce the committed amount of the Bridge Loan Facility to zero through the issuance of senior unsecured notes and/or equity (including this offering of common stock), we intend to enter into the Bridge Loan Facility contemporaneously with the closing of the Acquisition. The following is a summary description of certain anticipated terms of the Bridge Loan Facility based on the agreed-to term sheet. The terms of the credit agreement and related documentation for the Bridge Loan Facility, however, are under discussion and accordingly, their definitive terms may vary from those described below, particularly to the extent certain agreed-to "market flex" is exercised by the Joint Lead Arrangers. The Bridge Loan Facility will mature on the date that is one year after the closing date thereof. If the bridge loans are not repaid in full or on prior to the maturity date, in certain circumstances, the bridge loans will be automatically converted into senior unsecured term loans (the Bridge Term Loans), which may be exchanged for exchange notes (the Bridge Exchange Notes), which, in each case, mature eight years after the closing date of the Bridge Loan Facility. The borrowings under the Bridge Loan Facility, the Bridge Term Loans and the Bridge Exchange Notes, in each case, to the extent borrowed or issued, will be guaranteed by the Guarantors.

Table of Contents

Interest

Borrowings, if any, under the Bridge Loan Facility will bear interest at a floating annual rate. The interest rate on the Bridge Term Loans, if any, and Bridge Exchange Notes, if any, will bear interest at an agreed-to rate.

Collateral and Security

Borrowings under the Bridge Loan Facility, Bridge Term Loans and Bridge Exchange Notes, in each case, to the extent borrowed or issued, will be unsecured.

Covenants

The Bridge Loan Facility, the Bridge Term Loans and the Bridge Exchange Notes, in each case, to the extent entered into or issued, will contain such affirmative and negative covenants that are usual and customary for publicly traded high yield securities with such changes and additions as are mutually agreed to be appropriate in connection with the Bridge Loan Facility (it being understood that (x) there will be no financial maintenance covenants under the Bridge Loan Facility and (y) such covenants will under no circumstances be more restrictive than the analogous covenants included in the New Credit Facility).

Prepayments

The Bridge Loan Facility and the Bridge Term Loans, in each case, to the extent entered into or issued, will be prepayable at our option at any time, subject to customary exceptions. The Bridge Exchange Notes, to the extent issued, will be non-callable until the third anniversary of the closing date of the Bridge Loan Facility (subject to an "equity clawback" provision customary for publicly traded high yield debt securities and redemption at a make-whole price based on U.S. Treasury notes plus fifty basis points). Thereafter the Bridge Exchange Notes would be callable at a premium declining to par on the date that is the seventh anniversary of the closing of the Bridge Loan Facility.

The Bridge Loan Facility, the Bridge Term Loans and the Bridge Exchange Notes, in each case, to the extent entered into or issued, will contain customary mandatory repayment provisions.

Events of Default

The Bridge Loan Facility, the Bridge Term Loans and the Bridge Exchange Notes, in each case, to the extent entered into or issued will provide that, upon the occurrence of "Events of Default" (to be defined in the Bridge Loan Facility), our obligations thereunder may be accelerated. Such events of default will be customary for such facilities and will likely include payment defaults, material inaccuracies of representations and warranties, covenant defaults, cross-defaults to other material indebtedness, voluntary and involuntary bankruptcy proceedings, material money judgments, certain change of control events and other customary events of default.

Table of Contents

MATERIAL U.S. FEDERAL INCOME TAX CONSIDERATIONS FOR NON-U.S. HOLDERS OF OUR COMMON STOCK

The following is a summary of the material U.S. federal income tax consequences of the ownership and disposition of our common stock to non-U.S. holders, but does not purport to be a complete analysis of all the potential tax considerations relating thereto. This summary is based upon the provisions of the Internal Revenue Code of 1986, as amended (the Code), Treasury regulations promulgated thereunder, administrative rulings and judicial decisions, all as of the date hereof. These authorities may be changed or subject to differing interpretations, possibly with retroactive effect, so as to result in U.S. federal income tax consequences different from those set forth below. We have not sought any ruling from the Internal Revenue Service (the IRS), with respect to the statements made and the conclusions reached in the following summary, and there can be no assurance that the IRS will agree with such statements and conclusions.

This summary also does not address the tax considerations arising under the laws of any U.S. state or local or any non-U.S. jurisdiction, the Medicare tax on net investment income or any estate, gift or alternative minimum tax consequences. In addition, this discussion does not address tax considerations applicable to an investor's particular circumstances or to investors that may be subject to special tax rules, including, without limitation:

- § banks, insurance companies or other financial institutions;
- § tax-exempt organizations;
- § dealers in securities;
- § traders in securities that elect to use a mark-to-market method of accounting for their securities holdings;
- § persons that own, or are deemed to own, more than five percent of our capital stock;
- § certain former citizens or long-term residents of the United States;
- § persons who hold our common stock as a position in a hedging transaction, "straddle," "conversion transaction" or other risk reduction transaction;
- § persons who do not hold our common stock as a capital asset within the meaning of Section 1221 of the Code (generally, for investment purposes);
- § persons deemed to sell our common stock under the constructive sale provisions of the Code;
- § regulated investment companies or real estate investment trusts;
- § pension plans;
- § controlled foreign corporations; or
- §

passive foreign investment companies.

In addition, if a partnership, including any entity or arrangement classified as a partnership for U.S. federal income tax purposes, holds our common stock, the tax treatment of a partner generally will depend on the status of the partner and upon the activities of the partnership. Accordingly, partnerships that hold our common stock, and partners in such partnerships, should consult their tax advisors.

You are urged to consult your tax advisor with respect to the application of the U.S. federal income tax laws to your particular situation, as well as any tax consequences of the purchase, ownership and disposition of our common stock arising under the U.S. federal estate or gift tax rules or under the laws of any U.S. state or local or any non-U.S. or other taxing jurisdiction or under any applicable tax treaty.

Non-U.S. Holder Defined

For purposes of this discussion, you are a non-U.S. holder if you are a beneficial owner of our common stock that is for United States federal income tax purposes (i) a corporation that is not created or organized in or under the laws of the United States, any state thereof or the District of Columbia, (ii) an individual

S-24

Table of Contents

that is not a citizen or resident of the United States, or (iii) a foreign estate or trust that in either case is not subject to U.S. federal income tax on a net- income basis on income or gain from our common stock.

If a partnership (or any other entity or arrangement treated as a partnership for U.S. federal income tax purposes) holds our common stock, the U.S. federal income tax treatment of a partner of that partnership will generally depend upon the status of the partner, the activities of the partnership and certain determinations made at the partner level. A partnership, and a partner in such a partnership, that holds our common stock is urged to consult its tax advisor regarding the tax consequences of the purchase, ownership and disposition of our common stock.

Distributions

We do not intend to pay dividends on our common stock for the foreseeable future. In the event that we do make distributions on our common stock, those payments will constitute dividends for U.S. tax purposes to the extent paid from our current or accumulated earnings and profits, as determined under U.S. federal income tax principles. To the extent those distributions exceed both our current and our accumulated earnings and profits, they will constitute a return of capital and will first reduce your basis in our common stock, but not below zero, and then will be treated as gain from the sale of stock.

Any dividend paid to you generally will be subject to U.S. withholding tax either at a rate of 30% of the gross amount of the dividend or such lower rate as may be specified by an applicable income tax treaty. In order to receive a reduced treaty rate, you must provide us with an IRS Form W-8BEN (generally including a U.S. taxpayer identification number), an IRS Form W-8 BEN-E or other appropriate version of IRS Form W-8 (or a successor form), in each case certifying qualification for the reduced rate. If the non-U.S. holder holds the stock through a financial institution or other agent acting on the holder's behalf, the holder will be required to provide appropriate documentation to the agent. The holder's agent will then be required to provide certification to us or our paying agent, either directly or through intermediaries. For payments made to a partnership or other pass-through entity, the certification requirements generally apply to the partners or other beneficial owners rather than to the partnership or other entity, and the partnership or other entity must provide the partners' or other beneficial owners' documentation to us or our paying agent.

Dividends that are effectively connected with the conduct of a U.S. trade or business (and, if an income tax treaty applies, are attributable to a permanent establishment maintained by you in the United States) generally are exempt from such withholding tax. In order to obtain this exemption, you must provide an IRS Form W-8ECI or successor form or other applicable form properly certifying such exemption. Such effectively connected dividends, although not subject to withholding tax, are taxed at the same graduated rates applicable to U.S. persons, net of certain deductions and credits, subject to an applicable income tax treaty providing otherwise. In addition, if you are a corporate non-U.S. holder, dividends that are effectively connected with your conduct of a U.S. trade or business (and, if an income tax treaty applies, are attributable to a permanent establishment maintained by you in the United States) may also be subject to a branch profits tax at a rate of 30% or such lower rate as may be specified by an applicable income tax treaty.

If you are eligible for a reduced rate of withholding tax pursuant to a tax treaty, you may be able to obtain a refund of any excess amounts currently withheld if you file an appropriate and timely claim for refund with the IRS.

Table of Contents

Gain on Sale or Other Disposition of Common Stock

Subject to the discussion below regarding backup withholding and FATCA, a non-U.S. Holder generally will not be required to pay U.S. federal income tax on any gain realized upon the sale or other disposition of our common stock unless:

- § the gain is effectively connected with the conduct of a U.S. trade or business (and, if an income tax treaty applies, is attributable to a permanent establishment maintained by you in the U.S.), in which case you will be required to pay tax on the net gain derived from the sale under regular graduated U.S. federal income tax rates, if you are a corporation, you may be subject to the branch profits tax at a 30% rate or such lower rate as may be specified by an applicable income tax treaty;
- § you are an individual who is present in the United States for a period or periods aggregating 183 days or more during the calendar year in which the sale or disposition occurs and certain other conditions are met, in which case you will be required to pay a flat 30% tax on the gain derived from the sale, which tax may be offset by U.S.-source capital losses (even though you are not considered a resident of the United States) (or such lower rate as may be specified by an applicable income tax treaty); or
- § we are a "U.S. real property holding corporation" for U.S. federal income tax purposes (USRPHC) at any time within the shorter of the five-year period preceding the disposition or your holding period for our common stock. We believe that we are not currently and will not become a USRPHC. However, because the determination of whether we are a USRPHC depends on the fair market value of our U.S. real property relative to the fair market value of our other business assets, there can be no assurance that we will not become a USRPHC in the future. Even if we become a USRPHC, however, as long as our common stock is regularly traded on an established securities market, you will not be subject to this tax unless you actually or constructively own more than five percent of our common stock at any time during the applicable period.

Backup Withholding and Information Reporting

Generally, we must report annually to the IRS the amount of dividends paid to you, your name and address, and the amount of tax withheld, if any. A similar report will be sent to you. Pursuant to applicable income tax treaties or other agreements, the IRS may make these reports available to tax authorities in your country of residence.

Payments of dividends or of proceeds on the disposition of stock made to you may be subject to additional information reporting and backup withholding at a current rate of 28% unless you establish an exemption, for example by properly certifying your non-U.S. status on an IRS Form W-8BEN, IRS Form W-8BEN-E or other appropriate version of IRS Form W-8 (or a successor form). Notwithstanding the foregoing, backup withholding and information reporting may apply if our withholding agent has actual knowledge, or reason to know, that you are a U.S. person.

Backup withholding is not an additional tax; rather, the U.S. income tax liability of persons subject to backup withholding will be reduced by the amount of tax withheld. If withholding results in an overpayment of taxes, a refund or credit may generally be obtained from the IRS, provided that the required information is furnished to the IRS in a timely manner.

Foreign Account Tax Compliance Act ("FATCA")

Provisions commonly referred to as "FATCA" may impose withholding tax on certain types of payments made to "foreign financial institutions" and certain other non-U.S. entities. The legislation imposes a 30% withholding tax on dividends on, or gross proceeds from the sale or other disposition of, our common stock paid to a foreign financial institution or to certain non-financial foreign entities, unless (i) the foreign financial institution undertakes certain diligence and reporting obligations or (ii) the non-financial foreign entity either certifies it does not have any substantial U.S. owners or furnishes identifying information

Table of Contents

regarding each substantial U.S. owner and such entity meets certain other specified requirements. If the payee is a foreign financial institution, it must enter into an agreement with the U.S. Treasury requiring, among other things, that it undertake to identify accounts held by certain U.S. persons or U.S.-owned foreign entities, annually report certain information about such accounts, and withhold 30% on payments to account holders whose actions prevent it from complying with these reporting and other requirements. If the country in which a payee is resident has entered into an "intergovernmental agreement" with the United States regarding FATCA, that agreement may permit or require the payee to report to that country rather than to the U.S. Treasury. Under final regulations and published guidance, any obligation to withhold from payments made to a foreign financial institution or a foreign non-financial entity under this legislation with respect to dividends on our common stock began on July 1, 2014, but with respect to the gross proceeds of a sale or other disposition of our common stock will not begin until January 1, 2017. You should consult your tax advisor regarding FATCA.

The preceding discussion of U.S. federal tax considerations is for general information only. It is not tax advice. You should consult your own tax advisor regarding the particular U.S. federal, state and local and non-U.S. tax consequences of purchasing, holding and disposing of our common stock, including the consequences of any proposed change in applicable laws.

S-27

Table of Contents**UNDERWRITING**

Subject to the terms and conditions set forth in the underwriting agreement, dated July 30, 2015, among us and Jefferies LLC and Barclays Capital Inc., as the representatives of the underwriters named below and the joint book-running managers of this offering, we have agreed to sell to the underwriters, and each of the underwriters has agreed, severally and not jointly, to purchase from us the respective number of shares of common stock shown opposite its name below:

Underwriter	Number of Shares
Jefferies LLC	1,433,250
Barclays Capital Inc.	771,750
Leerink Partners LLC	551,250
Guggenheim Securities, LLC	196,875
Raymond James & Associates, Inc.	196,875
 Total	 3,150,000

The underwriting agreement provides that the obligations of the several underwriters are subject to certain conditions precedent such as the receipt by the underwriters of officers' certificates and legal opinions and approval of certain legal matters by their counsel. The underwriting agreement provides that the underwriters will purchase all of the shares of common stock if any of them are purchased. If an underwriter defaults, the underwriting agreement provides that the purchase commitments of the nondefaulting underwriters may be increased or the underwriting agreement may be terminated. We have agreed to indemnify the underwriters and certain of their controlling persons against certain liabilities, including liabilities under the Securities Act, and to contribute to payments that the underwriters may be required to make in respect of those liabilities.

The underwriters have advised us that, following the completion of this offering, they currently intend to make a market in the common stock as permitted by applicable laws and regulations. However, the underwriters are not obligated to do so, and the underwriters may discontinue any market-making activities at any time without notice in their sole discretion. Accordingly, no assurance can be given as to the liquidity of the trading market for the common stock, that you will be able to sell any of the common stock held by you at a particular time or that the prices that you receive when you sell will be favorable.

The underwriters are offering the shares of common stock subject to their acceptance of the shares of common stock from us and subject to prior sale. The underwriters reserve the right to withdraw, cancel or modify offers to the public and to reject orders in whole or in part.

Commission and Expenses

The underwriters have advised us that they propose to offer the shares of common stock to the public at the public offering price set forth on the cover page of this prospectus supplement and to certain dealers, which may include the underwriters, at that price less a concession not in excess of \$2.10 per share of common stock. After the offering, the public offering price, concession and reallowance to dealers may be reduced by the representatives. No such reduction will change the amount of proceeds to be received by us as set forth on the cover page of this prospectus.

The following table shows the public offering price, the underwriting discounts and commissions that we are to pay the underwriters and the proceeds, before expenses, to us in connection with this offering. Such

Table of Contents

amounts are shown assuming both no exercise and full exercise of the underwriters' option to purchase additional shares.

	Per Share		Total	
	Without Option to Purchase Additional Shares	With Option to Purchase Additional Shares	Without Option to Purchase Additional Shares	With Option to Purchase Additional Shares
Public offering price	\$ 63.750	\$ 63.750	\$ 200,812,500	\$ 230,934,375
Underwriting discounts and commissions paid by us	\$ 3.506	\$ 3.506	\$ 11,044,687	\$ 12,701,391
Proceeds to us, before expenses	\$ 60.244	\$ 60.244	\$ 189,767,813	\$ 218,232,984

We estimate expenses payable by us in connection with this offering, other than the underwriting discounts and commissions referred to above, will be approximately \$0.2 million. We have also agreed to reimburse the underwriters for certain of their expenses in an amount up to \$25,000 in the aggregate. The underwriters have agreed to reimburse us for certain fees and expenses in relation to this offering.

Listing

Our common stock is listed on The NASDAQ Global Select Market under the symbol "AMAG."

Option to Purchase Additional Shares

We have granted to the underwriters an option, exercisable for 30 days from the date of this prospectus supplement, to purchase, from time to time, in whole or in part, up to an aggregate of 472,500 shares from us at the public offering price set forth on the cover page of this prospectus supplement, less underwriting discounts and commissions. If the underwriters exercise this option, each underwriter will be obligated, subject to specified conditions, to purchase a number of additional shares proportionate to that underwriter's initial purchase commitment as indicated in the table above. This option may be exercised only if the underwriters sell more shares than the total number set forth on the cover page of this prospectus supplement.

No Sales of Similar Securities

We have agreed, subject to specified exceptions, that we will not (1) issue, pledge, sell or otherwise transfer or dispose of, directly or indirectly, or file with the Securities and Exchange Commission a registration statement under the Securities Act relating to, any shares of common stock or any securities convertible into or exercisable or exchangeable for common stock, or (2) enter into any swap or other arrangement that transfers in whole or in part, any of the economic consequences of ownership of our common stock or any such other securities (regardless of whether any such transaction is to be settled by delivery of common stock or such other securities, in cash or otherwise) in each case without the prior written consent of Jefferies LLC for a period of 60 days after the date of this prospectus supplement.

Our directors and executive officers have entered into lock-up agreements with the underwriters prior to the commencement of this offering pursuant to which each of these persons, for a period of 60 days after the date of this prospectus supplement, may not, without the prior written consent of Jefferies LLC, (1) offer, pledge, sell, contract to sell, sell any option or contract to purchase, purchase any option or contract to sell, grant any option, right or warrant to purchase, or otherwise transfer or dispose of, directly or indirectly, any shares of our common stock or any securities convertible into or exercisable or exchangeable for our common stock, or publicly disclose the intention to make any offer, sale, pledge or disposition, or (2) enter

Table of Contents

into any swap or other agreement that transfers, in whole or in part, any of the economic consequences of ownership of the common stock or such other securities, whether any such transaction described in clause (1) or (2) above is to be settled by delivery of common stock or such other securities, in cash or otherwise, or (3) make any demand for or exercise any right with respect to, the registration of any shares of our common stock or any security convertible into or exercisable or exchangeable for our common stock. In addition to certain other specified exceptions, the lock-up agreements will not prohibit William K. Heiden, our Chief Executive Officer and a member of our board of directors, and Frank E. Thomas, our President and Chief Operating Officer, from selling 9,000 and 10,000 shares, respectively, during the lock-up period pursuant to previously established trading plans pursuant to Rule 10b5-1 under the Exchange Act.

Stabilization

The underwriters have advised us that they, pursuant to Regulation M under the Exchange Act, certain persons participating in the offering may engage in short sale transactions, stabilizing transactions, syndicate covering transactions or the imposition of penalty bids in connection with this offering. These activities may have the effect of stabilizing or maintaining the market price of the common stock at a level above that which might otherwise prevail in the open market. Establishing short sales positions may involve either "covered" short sales or "naked" short sales.

"Covered" short sales are sales made in an amount not greater than the underwriters' option to purchase additional shares of our common stock in this offering. The underwriters may close out any covered short position by either exercising their option to purchase additional shares of our common stock or purchasing shares of our common stock in the open market. In determining the source of shares to close out the covered short position, the underwriters will consider, among other things, the price of shares available for purchase in the open market as compared to the price at which they may purchase shares through the option to purchase additional shares.

"Naked" short sales are sales in excess of the option to purchase additional shares of our common stock. The underwriters must close out any naked short position by purchasing shares in the open market. 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 shares of our common stock in the open market after pricing that could adversely affect investors who purchase in this offering.

A stabilizing bid is a bid for the purchase of shares of common stock on behalf of the underwriters for the purpose of fixing or maintaining the price of the common stock. A syndicate covering transaction is the bid for or the purchase of shares of common stock on behalf of the underwriters to reduce a short position incurred by the underwriters in connection with the offering. Similar to other purchase transactions, the underwriters' purchases to cover the syndicate short sales may have the effect of raising or maintaining the market price of our common stock or preventing or retarding a decline in the market price of our common stock. As a result, the price of our common stock may be higher than the price that might otherwise exist in the open market. A penalty bid is an arrangement permitting the underwriters to reclaim the selling concession otherwise accruing to a syndicate member in connection with the offering if the common stock originally sold by such syndicate member are purchased in a syndicate covering transaction and therefore have not been effectively placed by such syndicate member.

Neither of we nor any of the underwriters make any representation or prediction as to the direction or magnitude of any effect that the transactions described above may have on the price of our common stock. The underwriters are not obligated to engage in these activities and, if commenced, any of the activities may be discontinued at any time.

The underwriters may also engage in passive market making transactions in our common stock on The NASDAQ Global Select Market in accordance with Rule 103 of Regulation M during a period before the commencement of offers or sales of shares of our common stock in this offering and extending through the

Table of Contents

completion of distribution. A passive market maker must display its bid at a price not in excess of the highest independent bid of that security. However, if all independent bids are lowered below the passive market maker's bid, that bid must then be lowered when specified purchase limits are exceeded.

Electronic Distribution

A prospectus supplement and the accompanying prospectus in electronic format may be made available by e-mail or through online services maintained by one or more of the underwriters or their affiliates. In those cases, prospective investors may view offering terms online and may be allowed to place orders online. The underwriters may agree with us to allocate a specific number of shares of common stock for sale to online brokerage account holders. Any such allocation for online distributions will be made by the underwriters on the same basis as other allocations. Other than this prospectus supplement and the accompanying prospectus in electronic format, the information on the underwriters' web sites and any information contained in any other web site maintained by any of the underwriters is not part of this prospectus supplement and the accompanying prospectus, has not been approved and/or endorsed by us or the underwriters and should not be relied upon by investors.

Other Activities and Relationships

The underwriters and certain of their affiliates are full service financial institutions engaged in various activities, which may include securities trading, commercial and investment banking, financial advisory, investment management, investment research, principal investment, hedging, financing and brokerage activities. The underwriters and certain of their affiliates have, from time to time, performed, and may in the future perform, various commercial and investment banking and financial advisory services for us and our affiliates, for which they received or will receive customary fees and expenses. An affiliate of Jefferies LLC is administrative agent and collateral agent in respect of, and may act as, a lender, under the Existing Credit Facility, and we may use a portion of our net proceeds from this offering to repay borrowings under such facility. In addition, affiliates of certain of the underwriters have agreed to provide us with certain financing in connection with the Transactions, for which they will receive customary fees, and an affiliate of Jefferies LLC will be the administrative agent and collateral agent, and affiliates of both of the underwriters may be lenders, under our New Credit Facility.

In the ordinary course of their various business activities, the underwriters and certain of their affiliates may make or hold a broad array of investments and actively trade debt and equity securities (or related derivative securities) and financial instruments (including bank loans) for their own account and for the accounts of their customers, and such investment and securities activities may involve securities and/or instruments issued by us and our affiliates. If the underwriters or their respective affiliates have a lending relationship with us, they routinely hedge their credit exposure to us consistent with their customary risk management policies. The underwriters and their respective affiliates may hedge such exposure by entering into transactions which consist of either the purchase of credit default swaps or the creation of short positions in our securities or the securities of our affiliates, including potentially the common stock offered hereby. Any such short positions could adversely affect future trading prices of the common stock offered hereby. The underwriters and certain of their respective affiliates may also communicate independent investment recommendations, market color or trading ideas and/or publish or express independent research views in respect of such securities or instruments and may at any time hold, or recommend to clients that they acquire, long and/or short positions in such securities and instruments.

Disclaimers About Non-U.S. Jurisdictions

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), an offer to the public of any common stock which is the subject of the offering contemplated by this prospectus supplement and the accompanying prospectus may not be

Table of Contents

made in that Relevant Member State except that an offer to the public in that Relevant Member State of any common stock may be made at any time under the following exemptions under the Prospectus Directive, if they have been implemented in that Relevant Member State:

- (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 the underwriters nominated by us for any such offer; or
- (c) in any other circumstances falling within Article 3(2) of the Prospectus Directive;

provided that no such offer of securities shall require us or any of 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.

For the purposes of this provision, the expression an "offer to the public" in relation to any securities 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 securities to be offered so as to enable an investor to decide to purchase or subscribe the securities, as the same may be varied in that Relevant Member State by any measure implementing the Prospectus Directive in that Relevant Member State and the expression "Prospectus Directive" means Directive 2003/71/EC (and amendments thereto, including the 2010 PD Amending Directive, to the extent implemented in the Relevant Member State), and includes any relevant implementing measure in the Relevant Member State and the expression "2010 PD Amending Directive" means Directive 2010/73/EU.

United Kingdom

This prospectus supplement is only being distributed to, and is only directed at, persons in the United Kingdom that are qualified investors within the meaning of Article 2(1)(e) of the Prospectus Directive that are also (i) investment professionals falling within Article 19(5) of the Financial Services and Markets Act 2000 (Financial Promotion) Order 2005, as amended (the "Order") and/or (ii) high net worth entities falling within Article 49(2)(a) to (d) of the Order and other persons to whom it may lawfully be communicated pursuant to Article 49(2)(e) of the Order (each such person being referred to as a "relevant person").

Australia

This prospectus supplement is not a disclosure document for the purposes of Australia's Corporations Act 2001 (Cth) of Australia (the Corporations Act), has not been lodged with the Australian Securities & Investments Commission and is only directed to the categories of exempt persons set out below. Accordingly, if you receive this prospectus supplement in Australia:

- (a) You confirm and warrant that you are either:
 - § a "sophisticated investor" under section 708(8)(a) or (b) of the Corporations Act;
 - § 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;
 - § a person associated with us under Section 708(12) of the Corporations Act; or
 - § a "professional investor" within the meaning of section 708(11)(a) or (b) of the Corporations Act.

Edgar Filing: AMAG PHARMACEUTICALS INC. - Form 424B5

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 prospectus supplement is void and incapable of acceptance.

S-32

Table of Contents

(b)

You warrant and agree that you will not offer any of the securities issued to you pursuant to this prospectus supplement for resale in Australia within 12 months of those securities being issued unless any such resale offer is exempt from the requirement to issue a disclosure document under section 708 of the Corporations Act.

Hong Kong

No securities have been offered or sold, and no securities may be offered or sold, in Hong Kong, by means of any document, other than to persons whose ordinary business is to buy or sell shares or debentures, whether as principal or agent; or to "professional investors" as defined in the Securities and Futures Ordinance (Cap. 571) of Hong Kong (SFO) and any rules made under that Ordinance; or in other circumstances which do not result in the document being a "prospectus" as defined in the Companies Ordinance (Cap. 32) of Hong Kong (CO) or which do not constitute an offer or invitation to the public for the purpose of the CO or the SFO. No document, invitation or advertisement relating to the securities has been issued or 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 of Hong Kong (except if permitted under the securities laws of Hong Kong) other than with respect to securities which are or are intended to be disposed of only to persons outside Hong Kong or only to "professional investors" as defined in the SFO and any rules made under that Ordinance.

This prospectus supplement has not been registered with the Registrar of Companies in Hong Kong. Accordingly, this prospectus supplement may not be issued, circulated or distributed in Hong Kong, and the securities may not be offered for subscription to members of the public in Hong Kong. Each person acquiring the securities will be required, and is deemed by the acquisition of the securities, to confirm that he is aware of the restriction on offers of the securities described in this prospectus supplement and the relevant offering documents and that he is not acquiring, and has not been offered any securities in circumstances that contravene any such restrictions.

Japan

The offering has not been and will not be registered under the Financial Instruments and Exchange Law of Japan (Law No. 25 of 1948 of Japan, as amended), or FIEL, and the Initial Purchaser will not offer or sell any securities, directly or indirectly, in Japan or to, or for the benefit of, any resident of Japan (which term as used herein means any person resident in Japan, including any corporation or other entity organized under the laws of Japan), or to others for re-offering or resale, directly or indirectly, in Japan or to, or for the benefit of, any resident of Japan, except pursuant to an exemption from the registration requirements of, and otherwise in compliance with, the FIEL and any other applicable laws, regulations and ministerial guidelines of Japan.

Singapore

This prospectus supplement has not been and will not be lodged or registered as a prospectus with the Monetary Authority of Singapore. Accordingly, this prospectus supplement and any other document or material in connection with the offer or sale, or invitation for subscription or purchase, of the common stock may not be circulated or distributed, nor may the common stock 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.

Table of Contents

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

- (a) 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
- (b) 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,

securities (as defined in Section 239(1) of the SFA) 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 common stock pursuant to an offer made under Section 275 of the SFA except:

- (i) to an institutional investor or to a relevant person defined in Section 275(2) of the SFA, or to any person arising from an offer referred to in Section 275(1A) or Section 276(4)(i)(B) of the SFA;
- (ii) where no consideration is or will be given for the transfer;
- (iii) where the transfer is by operation of law;
- (iv) as specified in Section 276(7) of the SFA; or
- (v) as specified in Regulation 32 of the Securities and Futures (Offers of Investments) (Shares and Debentures) Regulations 2005 of Singapore.

Switzerland

The securities may not be publicly offered in Switzerland and will not be listed on the SIX Swiss Exchange (SIX) or on any other stock exchange or regulated trading facility in Switzerland. This prospectus supplement has been prepared without regard to the disclosure standards for issuance prospectuses under art. 652a or art. 1156 of the Swiss Code of Obligations or the disclosure standards for listing prospectuses under art. 27 ff. of the SIX Listing Rules or the listing rules of any other stock exchange or regulated trading facility in Switzerland. Neither this prospectus supplement nor any other offering or marketing material relating to the securities or the offering may be publicly distributed or otherwise made publicly available in Switzerland.

Neither this prospectus supplement nor any other offering or marketing material relating to the offering, us or the securities have been or will be filed with or approved by any Swiss regulatory authority. In particular, this prospectus supplement will not be filed with, and the offer of securities will not be supervised by, the Swiss Financial Market Supervisory Authority FINMA, and the offer of securities has not been and will not be authorized under the Swiss Federal Act on Collective Investment Schemes (CISA). The investor protection afforded to acquirers of interests in collective investment schemes under the CISA does not extend to acquirers of securities.

Table of Contents

LEGAL MATTERS

Certain legal matters relating to the shares of common stock offered hereby will be passed upon for us by Goodwin Procter LLP, Boston, Massachusetts. Certain legal matters will be passed upon for the underwriters by Jones Day, New York, New York.

EXPERTS

The consolidated financial statements and management's assessment of the effectiveness of internal control over financial reporting (which is included in Management's Annual Report on Internal Control over Financial Reporting) incorporated in this prospectus by reference to the Annual Report on Form 10-K of AMAG Pharmaceuticals, Inc. for the year ended December 31, 2014, as well as the audited historical financial statements of Cbr Systems, Inc. included as Exhibit 99.1 and the audited historical consolidated financial statements of CBR Holdco, LLC included as Exhibits 99.2 and 99.3 of AMAG Pharmaceutical, Inc.'s Current Report on Form 8-K dated July 29, 2015, have been so incorporated in reliance on the reports of PricewaterhouseCoopers LLP, an independent registered public accounting firm, given on the authority of said firm as experts in auditing and accounting.

The audited consolidated balance sheets of Lumara Health Inc. (formerly named K-V Pharmaceutical Company) as of March 31, 2014 and 2013 and the related consolidated statements of operations, changes in stockholders' equity (deficit) and cash flows for the period September 16, 2013 to March 31, 2014, and the period April 1, 2013 to September 15, 2013, and the year ended March 31, 2013 incorporated by reference in this prospectus, have been so incorporated in reliance on the report of BDO USA, LLP, an independent auditor, incorporated herein by reference, given on the authority of said firm as experts in auditing and accounting.

The audited consolidated balance sheets of Lumara Health Inc. (formerly named K-V Pharmaceutical Company) as of March 31, 2012 and 2011 and the related consolidated statements of operations, comprehensive loss, changes in shareholders' deficit and cash flows for each of the three years in the period ended March 31, 2012 and management's assessment of the effectiveness of internal control over financial reporting as of March 31, 2012 incorporated by reference in this prospectus, have been so incorporated in reliance on the reports of BDO USA, LLP, an independent registered public accounting firm (the report on the financial statements contains an explanatory paragraph regarding the Company's ability to continue as a going concern), incorporated herein by reference, given on the authority of said firm as experts in auditing and accounting.

WHERE YOU CAN FIND MORE INFORMATION

We file reports, proxy statements and other information with the SEC. You may read and copy the reports, proxy statements and other information that we file with the SEC at the SEC's Public Reference Room at 100 F Street, N.E., Washington, D.C. 20549. Please call the SEC at 1-800-SEC-0330 for information about the operation of its Public Reference Room and for its prescribed rates to obtain copies of such material. The SEC also maintains an Internet site that contains reports, proxy and information statements and other information regarding registrants, like us, that file electronically with the SEC. The address of the SEC's Internet site is <http://www.sec.gov>. Our Internet site is <http://www.amagpharma.com>. Information contained on our Internet site is not a part of this prospectus.

This prospectus supplement provides you with a general description of the common stock being registered. This prospectus supplement is part of a registration statement that we have filed with the SEC. To see more

Table of Contents

detail, you should read the registration statement and the exhibits and schedules filed with, or incorporated by reference into, our registration statement.

This registration statement, including the exhibits contained or incorporated by reference therein, can be read at the SEC web site or at the SEC office referred to above. Any statement made or incorporated by reference in this prospectus supplement concerning the contents of any contract, agreement or other document is only a summary of the actual contract, agreement or other document. If we have filed or incorporated by reference any contract, agreement or other document as an exhibit to the registration statement, you should read the exhibit for a more complete understanding of the document or matter involved. Each statement regarding a contract, agreement or other document is qualified in its entirety by reference to the actual document.

DOCUMENTS INCORPORATED BY REFERENCE

The SEC allows us to "incorporate by reference" the information we file with it, which means that we can disclose important information to you by referring you to those documents. The information we incorporate by reference is considered part of this prospectus supplement. Statements in this prospectus supplement regarding the contents of any contract or other document may not be complete, and in each instance we refer you to the copy of the contract or document filed as an exhibit to a document incorporated or deemed to be incorporated by reference in this prospectus supplement and the accompanying prospectus, each such statement being qualified in all respects by such reference. Later information filed with the SEC will update and supersede information we have included or incorporated by reference in this prospectus supplement.

We incorporate by reference the documents listed below, which have been filed with the SEC (other than Current Reports or portions thereof furnished under Item 2.02 or Item 7.01 of Form 8-K):

1. Our Annual Report on Form 10-K for the year ended December 31, 2014, as filed on February 18, 2015;
2. Our Quarterly Reports on Form 10-Q for the quarterly period ended March 31, 2015, as filed on May 6, 2015, and for the quarterly period ended June 30, 2015, as filed on July 27, 2015;
3. Our annual Proxy Statement on Schedule 14A relating to our annual meeting of stockholders, filed with the SEC on April 16, 2015 (with respect to those portions incorporated by reference into our Annual Report on Form 10-K for the year ended December 31, 2014);
4. Our Current Reports on Form 8-K as filed on November 12, 2014 (solely other than with respect to Exhibit 99.1 thereto), as amended on January 12, 2015 and as further amended on February 24, 2015, as well as our Current Reports on Form 8-K as filed on January 9, 2015, February 10, 2015, February 26, 2015, March 18, 2015, April 2, 2015, May 28, 2015, June 29, 2015 and July 29, 2015;
5. The description of our common stock, which is registered under Section 12 of the Exchange Act, contained under Item 8.01 of our Current Report on Form 8-K, as filed on August 1, 2013, including any amendment or report filed for the purpose of updating such descriptions; and
6. The description of our Series A Junior Participating Preferred Stock Purchase Rights, or the rights, contained under Item 3.03 of our Current Report on Form 8-K, as filed on September 4, 2009, and in our registration statement on Form 8-A registering the rights under Section 12 of the Exchange Act, filed with the SEC on September 4, 2009, including without limitation any amendments or reports filed for the purpose of updating that description, including the amendment described under Item 3.03 of our Current Report on Form 8-K, as filed on September 29, 2014,

Edgar Filing: AMAG PHARMACEUTICALS INC. - Form 424B5

Table of Contents

and in our registration statement on Form 8-A registering the rights under Section 12 of the Exchange Act, filed with the SEC on September 29, 2014.

We also incorporate by reference any filings made after the date of effectiveness of the registration statement with the SEC under Sections 13(a), 13(c), 14 or 15(d) of the Securities Exchange Act of 1934, except as to any portion of any future report or document that is not deemed filed under such provisions, until the offering of the securities made by this prospectus supplement and the accompanying prospectus is completed or terminated.

We will provide without charge to each person, including any beneficial owner, to whom this prospectus supplement and the accompanying prospectus are delivered, upon the written or oral request of that person, a copy of any and all of the information that has been incorporated in this prospectus supplement by reference other than exhibits unless those exhibits are specifically incorporated by reference into the documents. Requests for these copies should be directed to our investor relations department at the following address and telephone number: AMAG Pharmaceuticals, Inc., 1100 Winter Street, Waltham, Massachusetts, 02451; (617) 498-3300.

S-37

PROSPECTUS

**Common Stock
Preferred Stock
Debt Securities
Warrants
Units**

By this prospectus, we or any selling stockholder may offer and sell from time to time, in one or more offerings, our common stock, preferred stock, debt securities, warrants, or any combination thereof described in this prospectus. The warrants may be convertible into or exercisable or exchangeable for common stock or preferred stock, the preferred stock may be convertible into or exchangeable for common stock and the debt securities may be convertible into or exchangeable for common stock or preferred stock. Each time securities are offered pursuant to this prospectus, we will indicate the particular securities being offered and their specific terms in a supplement to this prospectus. In each case, we will describe the type and amount of securities being offered, the public offering price, the net proceeds we expect to receive and the other terms of the offering.

You should carefully read this prospectus, any prospectus supplement and any free writing prospectus, as well as any documents incorporated in any of the foregoing by reference, before you invest in our securities. This prospectus may not be used to sell our securities unless accompanied by a prospectus supplement. The prospectus supplement or any related free writing prospectus may also add to, update, supplement or clarify information contained in this prospectus.

We or any selling stockholder may offer and sell our securities to or through one or more agents, underwriters, dealers or other third parties or directly to one or more purchasers on a continuous or delayed basis. If agents, underwriters or dealers are used to sell our securities, we or any selling stockholder will name them and describe their compensation in a prospectus supplement. The price to the public of our securities and the net proceeds we expect to receive from the sale of such securities will also be set forth in a prospectus supplement. We will not receive any proceeds from the sale of securities by selling stockholders.

Our common stock is listed on The NASDAQ Global Select Market under the symbol "AMAG."

INVESTING IN OUR SECURITIES INVOLVES RISKS. YOU SHOULD REVIEW CAREFULLY THE RISKS AND UNCERTAINTIES DESCRIBED UNDER THE HEADING "RISK FACTORS" BEGINNING ON PAGE 5 AND CONTAINED IN THE APPLICABLE PROSPECTUS SUPPLEMENT AND ANY RELATED FREE WRITING PROSPECTUS, AND UNDER SIMILAR HEADINGS IN THE OTHER DOCUMENTS THAT ARE INCORPORATED BY REFERENCE HEREIN.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or passed upon the adequacy or the accuracy of this prospectus. Any representation to the contrary is a criminal offense.

Our principal executive office is at 1100 Winter Street, Waltham, Massachusetts 02451, and our telephone number is (617) 498-3300.

The date of this prospectus is February 24, 2015.

TABLE OF CONTENTS

	Page
<u>About This Prospectus</u>	<u>1</u>
<u>Cautionary Note Regarding Forward-Looking Statements</u>	<u>2</u>
<u>Our Company</u>	<u>3</u>
<u>Risk Factors</u>	<u>5</u>
<u>Description of Securities</u>	<u>6</u>
<u>Ratio of Earnings to Combined Fixed Charges and Preference Stock Dividends</u>	<u>8</u>
<u>Use of Proceeds</u>	<u>9</u>
<u>Selling Stockholders</u>	<u>10</u>
<u>Plan of Distribution</u>	<u>11</u>
<u>Legal Matters</u>	<u>13</u>
<u>Experts</u>	<u>13</u>
<u>Documents Incorporated by Reference</u>	<u>13</u>
<u>Where You Can Find More Information</u>	<u>14</u>

ABOUT THIS PROSPECTUS

This prospectus is part of an automatic shelf registration statement that we filed with the Securities and Exchange Commission, or the SEC, as a "well-known seasoned issuer" as defined in Rule 405 under the Securities Act of 1933, as amended, or the Securities Act. Under this shelf registration, we and/or selling stockholders may offer shares of our common stock and preferred stock, various series of warrants to purchase common stock or preferred stock, debt securities, or any combination thereof, from time to time in one or more offerings. This prospectus only provides you with a general description of the securities we and/or selling stockholders may offer. Each time we and/or selling stockholders offer a type or series of securities under this prospectus, we will provide a prospectus supplement that will contain more specific information about the specific terms of the offering. We may also authorize one or more free writing prospectuses to be provided to you that may contain material information relating to these offerings. This prospectus may not be used to sell our securities unless accompanied by a prospectus supplement. Each such prospectus supplement and any free writing prospectus that we may authorize to be provided to you may also add, update or change information contained in this prospectus or in documents incorporated by reference into this prospectus. **We urge you to carefully read this prospectus, any applicable prospectus supplement and any related free writing prospectus, together with the information incorporated herein by reference as described under the headings "Where You Can Find More Information" and "Documents Incorporated by Reference" before you invest in our securities.**

We have not authorized anyone to provide any information other than that contained or incorporated by reference in this prospectus or in any related prospectus supplement or free writing prospectus prepared by or on behalf of us or to which we have referred you. We take no responsibility for, and can provide no assurance as to the reliability of, any other information that others may give you. We take no responsibility for, and can provide no assurances as to the reliability of, any information not contained in this prospectus, any applicable prospectus supplement or any related free writing prospectus that we or a selling stockholder may authorize to be provided to you. This prospectus is an offer to sell only the securities offered hereby, but only under circumstances and in jurisdictions where it is lawful to do so. You should assume that the information in this prospectus, any applicable prospectus supplement or any related free writing prospectus is accurate only as of the date on the front of the document and that any information incorporated by reference is accurate only as of the date of the document incorporated by reference, regardless of the time of delivery of this prospectus, any applicable prospectus supplement or any related free writing prospectus, or any sale of a security.

This prospectus contains summaries of certain provisions contained in some of the documents described herein, but reference is made to the actual documents for complete information. All of the summaries are qualified in their entirety by the actual documents. Copies of some of the documents referred to herein have been filed, will be filed or will be incorporated by reference as exhibits to the registration statement of which this prospectus is a part, and you may obtain copies of those documents as described below under the heading "Where You Can Find More Information."

References in this prospectus to the terms "AMAG Pharmaceuticals," "company," "we," "our" or "us" or other similar terms means AMAG Pharmaceuticals, Inc.

Feraheme is a registered trademark of AMAG Pharmaceuticals, Inc., *MuGard* is a registered trademark of PlasmaTech Biopharmaceuticals, Inc. (formerly known as Access Pharmaceuticals, Inc.) (PlasmaTech), *Makena* is a registered trademark of Lumara Health Inc. and *Lumara Health* is a registered trademark of Lumara Health Inc. Unless the context suggests otherwise, references to "Feraheme" refer to both *Feraheme* (the trade name for ferumoxytol in the U.S. and Canada) and *Rienso* (the trade name for ferumoxytol in the EU and Switzerland).

CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS

Any statements in this prospectus or the applicable prospectus supplement or free writing prospectus, including the documents that we incorporate by reference herein, about our expectations, beliefs, plans, objectives, assumptions or future events or performance are not historical facts and are forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, or the "Securities Act," and Section 21E of the Securities Exchange Act of 1934, as amended, or the "Exchange Act." You can identify these forward-looking statements by the use of words or phrases such as "believe," "may," "could," "will," "estimate," "continue," "anticipate," "intend," "seek," "plan," "expect," "potential," "predict," "project," "should," or "would." Among the factors that could cause actual results to differ materially from those indicated in the forward-looking statements are risks and uncertainties inherent in our business including, without limitation (1) our dependence on the success of our product portfolio and maintaining commercialization of our products, including *Makena* and *Feraheme*; (2) intense competition, including from generic products; (3) maintaining the proprietary nature of our technology; (4) our reliance on third parties in our business, including to manufacture our products, conduct our clinical trials and undertake distribution of our products; (5) our reliance on and the extent of reimbursement from third parties for the use of our products, including *Makena's* high Medicaid reimbursement concentration; (6) the impact of *Makena's* loss of orphan drug exclusivity in February 2018, competition from compounded pharmacies and our ability to implement *Makena's* lifecycle management program; (7) perceptions related to pricing and access for *Makena*; (8) post-marketing commitments for *Makena*; (9) limitations on *Feraheme* sales given its narrow CKD indication and the potential impact on sales of any actual or perceived safety problems; (10) our ability to receive regulatory approval for *Feraheme* in the broader IDA indication and *Feraheme's* ability to compete in such market even if regulatory approval is pursued and received; (11) our customer concentration, especially with regard to *Feraheme*; (12) the impact of the termination of our arrangement with Takeda and our commercialization efforts, if any and including cessation thereof, for *Feraheme* outside of the U.S., including the impact on U.S. sales; (13) our level of indebtedness, access to sufficient capital and availability of net operating loss carryforwards and other tax assets; (14) the risk of potential litigation, including securities and product liability claims; and (15) other risks identified in our filings with the U.S. Securities and Exchange Commission (SEC), including our Annual Report on Form 10-K for the fiscal year ended December 31, 2014 and subsequent filings with the SEC. Any of the above risks and uncertainties could materially and adversely affect AMAG's results of operations, its profitability and its cash flows, which would, in turn, have a significant and adverse impact on AMAG's stock price. Use of the term "including" in the two paragraphs above shall mean in each case "including, but not limited to." AMAG cautions you not to place undue reliance on any forward-looking statements, which speak only as of the date they are made.

You should understand that our actual future results may be materially different from what we expect. We qualify all of the forward-looking statements in the foregoing documents by these cautionary statements.

Although we believe that the expectations reflected in our forward-looking statements are reasonable, we cannot guarantee future results, events, levels of activity, performance or achievement. Given these uncertainties, you should not place undue reliance on these forward-looking statements. We undertake no obligation to publicly update or revise any forward-looking statements, whether as a result of new information, future events or otherwise, unless required by law. Before deciding to purchase our securities, you should carefully consider the risk factors incorporated herein by reference, in addition to the other information set forth in this prospectus, any accompanying prospectus supplement, any free writing prospectus and in the documents incorporated by reference.

OUR COMPANY

This business overview highlights information contained in certain documents incorporated by reference into this prospectus. This business overview does not contain all of the information that you should consider before investing in our securities. You should read the entire prospectus carefully, including the "Risk Factors" section and the financial statements and the notes to those statements incorporated herein by reference, before making an investment decision.

AMAG Pharmaceuticals, Inc., a Delaware corporation, was founded in 1981. We are a specialty pharmaceutical company with a focus on maternal health, anemia and cancer supportive care. We currently market Makena® (hydroxyprogesterone caproate injection), Feraheme® (ferumoxytol) Injection for Intravenous use to treat iron deficiency anemia (IDA) and MuGard® Mucoadhesive Oral Wound Rinse, for the management of oral mucositis. The primary goal of our company, including our maternal health division, Lumara Health™, is to bring to market therapies that provide clear benefits and improve patients' lives.

Currently, our two primary sources of revenue are from the sale of *Makena* and *Feraheme*. On November 12, 2014, we acquired Lumara Health (the Lumara Acquisition), a privately-held pharmaceutical company specializing in women's health, for approximately \$600.0 million in upfront cash consideration (subject to finalization of certain adjustments related to Lumara Health's financial position at the time of closing, including adjustments related to working capital, net debt and transaction expenses as set forth in the definitive agreement with Lumara Health) and 3.2 million unregistered shares of our common stock having a fair value of \$112.0 million at the time of closing. In connection with the acquisition of Lumara Health, we acquired Lumara Health's marketed drug product, *Makena*, a progestin indicated to reduce the risk of preterm birth in women with a singleton pregnancy who have a history of singleton spontaneous preterm birth. We sell *Makena* to specialty pharmacies and distributors, who, in turn, sell *Makena* to health care providers, hospitals, government agencies and integrated delivery systems. The Lumara Acquisition is described in greater detail in our Current Report on Form 8-K filed on November 12, 2014, as amended on January 12, 2015 and as further amended on February 24, 2015.

Feraheme was approved for marketing in the U.S. in June 2009 by the U.S. Food and Drug Administration (FDA) for use as an intravenous iron replacement therapy for the treatment of IDA in adult patients with chronic kidney disease. We began selling *Feraheme* in the U.S. in July 2009 through our own commercial organization, including a specialty sales force. We sell *Feraheme* to authorized wholesalers and specialty distributors, who, in turn, sell *Feraheme* to healthcare providers who administer *Feraheme* primarily within hospitals, hematology and oncology centers, and nephrology clinics.

On June 6, 2013, we entered into a License Agreement with PlasmaTech under which we acquired the U.S. commercial rights to *MuGard* (the MuGard License Agreement). *MuGard* is indicated for the management of oral mucositis/stomatitis (that may be caused by radiotherapy and/or chemotherapy) and all types of oral wounds (mouth sores and injuries), including aphthous ulcers/canker sores and traumatic ulcers, such as those caused by oral surgery or ill-fitting dentures or braces. Under the MuGard License Agreement, we obtained an exclusive, royalty-bearing license, with the right to grant sublicenses, to certain intellectual property rights, including know-how, patents and trademarks, to use, import, offer for sale, sell, manufacture and commercialize *MuGard* in the U.S. and its territories. In addition, PlasmaTech has assigned us all of its right, title and interest in *MuGard*-related internet and social media outlets and other sales, marketing and promotional materials currently owned or controlled by PlasmaTech. We sell *MuGard* to wholesalers and specialty and retail pharmacies.

Our common stock trades on The NASDAQ Global Select Market under the trading symbol "AMAG."

Edgar Filing: AMAG PHARMACEUTICALS INC. - Form 424B5

Our principal offices are located at 1100 Winter Street, Waltham, Massachusetts 02451, and our telephone number is (617) 498-3300. Our website address is www.amagpharma.com. Information found on, or accessible through, our website is not a part of, and is not incorporated into, this prospectus, and you should not consider it part of this prospectus or part of any prospectus supplement. Our website address is included in this document as an inactive textual reference only.

RISK FACTORS

An investment in our securities involves a high degree of risk. In addition to the other information included in, or incorporated by reference into, this prospectus, the applicable prospectus supplement and any related free writing prospectus, you should carefully consider the risk factors incorporated by reference to our Annual Report on Form 10-K for the year ended December 31, 2014, as the same may be updated from time to time by our future filings under the Exchange Act, when determining whether or not to purchase the securities offered under this prospectus and the prospectus supplement.

DESCRIPTION OF SECURITIES

We and/or any selling stockholder may offer shares of our common stock and preferred stock, various series of warrants to purchase common stock or preferred stock, debt securities, in one or more series, as either senior or subordinated debt or as senior or subordinated convertible debt, or any combination thereof from time to time in one or more offerings under this prospectus at prices and on terms to be determined at the time of any offering. This prospectus provides you with a general description of the securities we and/or any selling stockholder may offer. Each time we and/or any selling stockholder offer a type or series of securities under this prospectus, we will provide a prospectus supplement and/or free writing prospectus that will describe the specific amounts, prices and other important terms of the securities.

Common Stock. We and/or any selling stockholder may issue and/or sell, as applicable, shares of our common stock from time to time. Holders of shares of our common stock are entitled to one vote for each share held of record on all matters to be voted on by stockholders and do not have cumulative voting rights. Subject to the preferences that may be applicable to any then outstanding preferred stock, the holders of our outstanding shares of common stock are entitled to receive dividends, if any, as may be declared from time to time by our board of directors out of legally available funds. In the event of our liquidation, dissolution or winding up, holders of our common stock will be entitled to share ratably in the net assets legally available for distribution to stockholders after the payment of all of our debts and other liabilities, subject to the satisfaction of any liquidation preference granted to the holders of any outstanding shares of preferred stock.

Preferred Stock. We may issue shares of our preferred stock from time to time, in one or more series. Our board of directors will determine the rights, preferences and privileges of the shares of each wholly unissued series, and any qualifications, limitations or restrictions thereon, including dividend rights, conversion rights, preemptive rights, terms of redemption or repurchase, liquidation preferences, sinking fund terms and the number of shares constituting any series or the designation of any series. Convertible preferred stock will be convertible into our common stock or exchangeable for other securities. Conversion may be mandatory or at the holder's option and would be at prescribed conversion rates.

If we sell any series of preferred stock under this prospectus, we will fix the rights, preferences and privileges of the preferred stock of such series, as well as any qualifications, limitations or restrictions thereon, in the certificate of designation relating to that series. We will file as an exhibit to the registration statement of which this prospectus is a part, or will incorporate by reference from reports that we file with the SEC, the form of any certificate of designation that describes the terms of the series of preferred stock we are offering before the issuance of that series of preferred stock. We urge you to read the applicable prospectus supplement and any free writing prospectus that we may authorize to be provided to you related to the series of preferred stock being offered, as well as the complete certificate of designation that contains the terms of the applicable series of preferred stock.

Warrants. We may issue warrants for the purchase of common stock and/or preferred stock in one or more series. We may issue warrants independently or together with common stock and/or preferred stock, and the warrants may be attached to or separate from these securities. We urge you to read the applicable prospectus supplement and any free writing prospectus that we may authorize to be provided to you related to the particular series of warrants being offered, as well as the complete warrant agreements and warrant certificates that contain the terms of the warrants. Forms of the warrant agreements and forms of warrant certificates containing the terms of the warrants being offered will be filed as exhibits to the registration statement of which this prospectus is a part or will be incorporated by reference from reports that we file with the SEC.

Edgar Filing: AMAG PHARMACEUTICALS INC. - Form 424B5

We will evidence each series of warrants by warrant certificates that we will issue. Warrants may be issued under an applicable warrant agreement that we enter into with a warrant agent. We will indicate the name and address of the warrant agent, if applicable, in the prospectus supplement relating to the particular series of warrants being offered.

Units. We may issue, in one or more series, units consisting of common stock, preferred stock, and/or warrants for the purchase of common stock and/or preferred stock in any combination. We urge you to read the applicable prospectus supplement and any free writing prospectus that we may authorize to be provided to you related to the series of units being offered, as well as the complete unit agreement that contains the terms of the units. We will file as exhibits to the registration statement of which this prospectus is a part, or will incorporate by reference from reports that we file with the SEC, the form of unit agreement and any supplemental agreements that describe the terms of the series of units we are offering before the issuance of the related series of units.

We will evidence each series of units by unit certificates that we will issue. Units may be issued under a unit agreement that we enter into with a unit agent. We will indicate the name and address of the unit agent, if applicable, in the prospectus supplement relating to the particular series of units being offered.

Debt Securities. We may issue debt securities, in one or more series, as either senior or subordinated debt or as senior or subordinated convertible debt. In this prospectus, we have summarized certain general features of the debt securities. We urge you, however, to read the applicable prospectus supplement and any free writing prospectus that we may authorize to be provided to you related to the particular series of debt securities being offered, as well as the complete indenture that contains the terms of the debt securities. We will file as exhibits to the registration statement of which this prospectus is a part, the form of indenture and any supplemental agreements that describe the terms of the series of debt securities we are offering before the issuance of the related series of debt securities.

We may evidence each series of debt securities we will issue by an indenture that we enter into with a trustee. We will indicate the name and address of the trustee, if applicable, in the prospectus supplement relating to the particular series of debt securities being offered.

**RATIO OF EARNINGS TO COMBINED FIXED CHARGES
AND PREFERENCE STOCK DIVIDENDS**

Our ratio of earnings to fixed charges for recently completed fiscal years and any required interim periods will be specified in a prospectus supplement or in a document that we file with the SEC and incorporate by reference in the future.

USE OF PROCEEDS

Unless otherwise described in a prospectus supplement or related free writing prospectus, we intend to use the net proceeds from the sale of the offered securities for general corporate purposes, which may include, but are not limited to, working capital, strategic acquisitions and other potential business development activities, ongoing research and development activities and capital expenditures. Pending any specific utilization, the proceeds from the sale of the offered securities may be invested in a manner designed to ensure levels of liquidity which correspond to our current and foreseeable cash needs. Such investments may include, but may not be limited to, short-term investments, including government bonds, or other interest-bearing investments. From time to time, we may engage in additional public or private financings of a character and amount which we may deem appropriate. Unless otherwise set forth in a prospectus supplement, we will not receive any proceeds from the sale of securities by any selling stockholder.

SELLING STOCKHOLDERS

Selling stockholders are persons or entities that, directly or indirectly, have acquired or will from time to time acquire from us, our securities. Such selling stockholders may be parties to registration rights agreements with us, or we otherwise may have agreed or will agree to register their securities for resale. The initial purchasers of our securities, as well as their transferees, pledges, donees or successors, all of whom we refer to as "selling stockholders," may from time to time offer and sell our securities pursuant to this prospectus and any applicable prospectus supplement.

The applicable prospectus supplement will set forth the name of each of the selling stockholders and the number of securities beneficially owned by such selling stockholder that are covered by such prospectus supplement. The applicable prospectus supplement will also disclose whether any of the selling stockholders has held any position or office with, has been employed by or otherwise has had a material relationship with us during the three years prior to the date of the applicable prospectus supplement.

PLAN OF DISTRIBUTION

We and/or any selling stockholder may sell our securities from time to time in one or more transactions. We and/or any selling stockholder may sell our securities to or through agents, underwriters, dealers, remarketing firms or other third parties or directly to one or more purchasers or through a combination of any of these methods. In some cases, we and/or any selling stockholder or dealers acting with us and/or any selling stockholder or on behalf of us and/or any selling stockholder may also purchase our securities and reoffer them to the public. We and/or any selling stockholder may also offer and sell, or agree to deliver, our securities pursuant to, or in connection with, any option agreement or other contractual arrangement.

Agents whom we designate may solicit offers to purchase our securities.

We and/or any selling stockholder will name any agent involved in offering or selling our securities, and disclose any commissions that we will pay to the agent, in the applicable prospectus supplement.

Unless we and/or any selling stockholder indicate otherwise in the applicable prospectus supplement, agents will act on a best efforts basis for the period of their appointment.

Agents may be deemed to be underwriters under the Securities Act of any of our securities that they offer or sell.

We and/or any selling stockholder may use an underwriter or underwriters in the offer or sale of our securities.

If we and/or any selling stockholder use an underwriter or underwriters, we will execute an underwriting agreement with the underwriter or underwriters at the time that we reach an agreement for the sale of our securities.

We and/or any selling stockholder will include the names of the specific managing underwriter or underwriters, as well as the names of any other underwriters, and the terms of the transactions, including the compensation the underwriters and dealers will receive, in the applicable prospectus supplement.

The underwriters will use the applicable prospectus supplement, together with the prospectus, to sell our securities.

We may use a dealer to sell our securities.

If we and/or any selling stockholder use a dealer, we will sell our securities to the dealer, as principal.

The dealer will then sell our securities to the public at varying prices that the dealer will determine at the time it sells our securities.

We and/or any selling stockholder will include the name of the dealer and the terms of the transactions with the dealer in the applicable prospectus supplement.

We and/or any selling stockholder may solicit directly offers to purchase our securities, and we may directly sell our securities to institutional or other investors. We and/or any selling stockholder will describe the terms of direct sales in the applicable prospectus supplement.

We and/or any selling stockholder may engage in at the market offerings into an existing trading market in accordance with Rule 415(a)(4) of the Securities Act.

We and/or any selling stockholder will indemnify agents, underwriters and dealers against certain liabilities, including liabilities under the Securities Act. Agents, underwriters and dealers, or their

Edgar Filing: AMAG PHARMACEUTICALS INC. - Form 424B5

affiliates, may be customers of, engage in transactions with or perform services for us or our respective affiliates, in the ordinary course of business.

We and/or any selling stockholder may authorize agents and underwriters to solicit offers by certain institutions to purchase our securities at the public offering price under delayed delivery contracts.

If we and/or any selling stockholder use delayed delivery contracts, we will disclose that we are using them in the prospectus supplement and will tell you when we will demand payment and when delivery of our securities will be made under the delayed delivery contracts.

These delayed delivery contracts will be subject only to the conditions that we describe in the prospectus supplement.

We and/or any selling stockholder will describe in the applicable prospectus supplement the commission that underwriters and agents soliciting purchases of our securities under delayed delivery contracts will be entitled to receive.

Unless otherwise specified in connection with a particular underwritten offering of our securities, the underwriters will not be obligated to purchase offered securities unless specified conditions are satisfied, and if the underwriters do purchase any offered securities, they will purchase all offered securities.

In connection with underwritten offerings of the offered securities and in accordance with applicable law and industry practice, the underwriters in certain circumstances are permitted to engage in certain transactions that stabilize the price of our securities. Such transactions consist of bids or purchases for the purpose of pegging, fixing or maintaining the price of our securities. If the underwriters create a short position in our securities in connection with the offering (i.e., if they sell more securities than are set forth on the cover page of the applicable prospectus supplement), the underwriters may reduce that short position by purchasing our securities in the open market or as otherwise provided in the applicable prospectus supplement. The underwriters may also impose a penalty bid, whereby selling concessions allowed to dealers participating in the offering may be reclaimed if the securities sold by them are repurchased in connection with stabilization transactions. In general, purchases of a security for the purpose of stabilization or to reduce a short position could cause the price of the security to be higher than it might be in the absence of such purchases. The imposition of a penalty bid might also have an effect on the price of our securities to the extent that it were to discourage resales of our securities. The underwriters are not required to engage in these activities and may end any of these activities at any time.

We and/or any selling stockholder may effect sales of securities in connection with forward sale, option or other types of agreements with third parties. Any distribution of securities pursuant to any forward sale agreement may be effected from time to time in one or more transactions that may take place through a stock exchange, including block trades or ordinary broker's transactions, or through broker-dealers acting either as principal or agent, or through privately-negotiated transactions, or through an underwritten public offering, or through a combination of any such methods of sale, at market prices prevailing at the time of sale, prices relating to such prevailing market prices or at negotiated or fixed prices.

The specific terms of the lock-up provisions, if any, in respect of any given offering will be described in the applicable prospectus supplement.

LEGAL MATTERS

Certain legal matters with respect to the securities offered hereby have been passed upon by Goodwin Procter LLP, Boston, Massachusetts.

EXPERTS

The financial statements and management's assessment of the effectiveness of internal control over financial reporting (which is included in "Management's Annual Report on Internal Control over Financial Reporting") incorporated in this prospectus by reference to the Annual Report on Form 10-K for the year ended December 31, 2014 have been so incorporated in reliance on the report of PricewaterhouseCoopers LLP, an independent registered public accounting firm, given on the authority of said firm as experts in auditing and accounting.

The audited consolidated balance sheets of Lumara Health Inc. (formerly named K-V Pharmaceutical Company) as of March 31, 2014 and 2013 and the related consolidated statements of operations, changes in stockholders' equity (deficit) and cash flows for the period September 16, 2013 to March 31, 2014, and the period April 1, 2013 to September 15, 2013, and the year ended March 31, 2013 incorporated by reference in this prospectus, have been so incorporated in reliance on the report of BDO USA, LLP, an independent auditor, incorporated herein by reference, given on the authority of said firm as experts in auditing and accounting.

The audited consolidated balance sheets of Lumara Health Inc. (formerly named K-V Pharmaceutical Company) as of March 31, 2012 and 2011 and the related consolidated statements of operations, comprehensive loss, changes in shareholders' deficit and cash flows for each of the three years in the period ended March 31, 2012 and management's assessment of the effectiveness of internal control over financial reporting as of March 31, 2012 incorporated by reference in this prospectus, have been so incorporated in reliance on the reports of BDO USA, LLP, an independent registered public accounting firm (the report on the financial statements contains an explanatory paragraph regarding the Company's ability to continue as a going concern), incorporated herein by reference, given on the authority of said firm as experts in auditing and accounting.

DOCUMENTS INCORPORATED BY REFERENCE

The SEC allows us to "incorporate by reference" the information we file with it, which means that we can disclose important information to you by referring you to those documents. The information we incorporate by reference is considered part of this prospectus. Statements in this prospectus regarding the contents of any contract or other document may not be complete. You should refer to the copy of the contract or other document filed as an exhibit to the registration statement. Later information filed with the SEC will update and supersede information we have included or incorporated by reference in this prospectus.

We incorporate by reference the documents listed below, which have been filed with the SEC (other than Current Reports or portions thereof furnished under Item 2.02 or Item 7.01 of Form 8-K):

1. Our Annual Report on Form 10-K for the fiscal year ended December 31, 2014, as filed on February 18, 2015;
2. Our Current Report on Form 8-K as filed on November 12, 2014 (solely other than with respect to Exhibit 99.1 thereto), as amended on January 12, 2015 and as further amended on February 24, 2015, as well as our Current Report on Form 8-K as filed on January 9, 2015;
3. The description of our common stock, which is registered under Section 12 of the Exchange Act, contained under Item 8.01 of our Current Report on Form 8-K, as filed on

Edgar Filing: AMAG PHARMACEUTICALS INC. - Form 424B5

August 1, 2013, including any amendment or report filed for the purpose of updating such descriptions; and

4. The description of our Series A Junior Participating Preferred Stock Purchase Rights, or the rights, contained under Item 3.03 of our Current Report on Form 8-K, as filed on September 4, 2009, and in our registration statement on Form 8-A registering the rights under Section 12 of the Exchange Act, filed with the SEC on September 4, 2009, including without limitation any amendments or reports filed for the purpose of updating that description, including the amendment described under Item 3.03 of our Current Report on Form 8-K, as filed on September 29, 2014, and in our registration statement on Form 8-A registering the rights under Section 12 of the Exchange Act, filed with the SEC on September 29, 2014.

We also incorporate by reference any filings made after the date of effectiveness of the registration statement with the SEC under Sections 13(a), 13(c), 14 or 15(d) of the Securities Exchange Act of 1934, except as to any portion of any future report or document that is not deemed filed under such provisions, until the offering of the securities made by this prospectus is completed or terminated.

We will provide without charge to each person, including any beneficial owner, to whom this prospectus is delivered, upon the written or oral request of that person, a copy of any and all of the information that has been incorporated in this prospectus by reference other than exhibits unless those exhibits are specifically incorporated by reference into the documents. Requests for these copies should be directed to our investor relations department at the following address and telephone number: AMAG Pharmaceuticals, Inc., 1100 Winter Street, Waltham, Massachusetts, 02451; (617) 498-3300.

WHERE YOU CAN FIND MORE INFORMATION

We file reports, proxy statements and other information with the SEC. You may read and copy the reports, proxy statements and other information that we file with the SEC at the SEC's Public Reference Room at 100 F Street, N.E., Washington, D.C. 20549. Please call the SEC at 1-800-SEC-0330 for information about the operation of its Public Reference Room and for its prescribed rates to obtain copies of such material. The SEC also maintains an Internet site that contains reports, proxy and information statements and other information regarding registrants, like us, that file electronically with the SEC. The address of the SEC's Internet site is <http://www.sec.gov>. Our Internet site is <http://www.amagpharma.com>. Information contained on our Internet site is not a part of this prospectus.

This prospectus provides you with a general description of the common stock, preferred stock, debt securities, warrants, and units being registered. This prospectus is part of a registration statement that we have filed with the SEC. To see more detail, you should read the registration statement and the exhibits and schedules filed with, or incorporated by reference into, our registration statement.

This registration statement, including the exhibits contained or incorporated by reference therein, can be read at the SEC web site or at the SEC office referred to above. Any statement made or incorporated by reference in this prospectus concerning the contents of any contract, agreement or other document is only a summary of the actual contract, agreement or other document. If we have filed or incorporated by reference any contract, agreement or other document as an exhibit to the registration statement, you should read the exhibit for a more complete understanding of the document or matter involved. Each statement regarding a contract, agreement or other document is qualified in its entirety by reference to the actual document.

Table of Contents

3,150,000 Shares

AMAG Pharmaceuticals, Inc.

Common Stock

Prospectus Supplement

Joint Book-Running Managers

Jefferies

Barclays

Lead Manager

Leerink Partners

Co-Managers

Guggenheim Securities

Raymond James

July 30, 2015
