

# CENTER FOR DRUG EVALUATION AND RESEARCH

Approval Package for:

*APPLICATION NUMBER:*

**206494Orig1s000**

*Trade Name:* AVYCAZ Injection

*Generic Name:* ceftazidime-avibactam

*Sponsor:* Forest Research Institute, Inc.

*Approval Date:* February 25, 2015

*Indication:* For Complicated Urinary Tract Infections (cUTI) including Pyelonephritis and Complicated Intra-abdominal Infections (cIAI).

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## 206494Orig1s000

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*APPLICATION NUMBER:*

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**APPROVAL LETTER**



NDA 206494

**NDA APPROVAL**

Forest Research Institute, Inc.  
Attention: Ann Howell, PharmD, MS  
Associate Director, Regulatory Affairs  
Harborside Financial Center  
Plaza 5, Suite 1900  
Jersey City, NJ 07311

Dear Dr. Howell:

Please refer to your New Drug Application (NDA) dated June 25, 2014, received June 25, 2014, submitted pursuant to section 505(b)(2) of the Federal Food, Drug, and Cosmetic Act (FDCA) for AVYCAZ (ceftazidime-avibactam) Injection.

We acknowledge receipt of your amendments dated July 9 and 10, August 4, 18 and 21, September 23 (2), October 2, 3, 9 (2), 16 (2), 23, 29, 30, and 31, November 4, 7, 11, 12, 13 21, and 26, December 2 and 15, 2014, and January 20, 26 and 30, February 11, and February 12, 2015.

This new drug application provides for the use of AVYCAZ (ceftazidime-avibactam) Injection for Complicated Urinary Tract Infections (cUTI) including Pyelonephritis and Complicated Intra-abdominal Infections (cIAI).

We have completed our review of this application, as amended. It is approved, effective on the date of this letter, for use as recommended in the enclosed agreed-upon labeling text.

**CONTENT OF LABELING**

As soon as possible, but no later than 14 days from the date of this letter, submit the content of labeling [21 CFR 314.50(l)] in structured product labeling (SPL) format using the FDA automated drug registration and listing system (eLIST), as described at <http://www.fda.gov/ForIndustry/DataStandards/StructuredProductLabeling/default.htm>. Content of labeling must be identical to the enclosed labeling text for the package insert. Information on submitting SPL files using eLIST may be found in the guidance for industry SPL Standard for Content of Labeling Technical Qs and As, available at <http://www.fda.gov/downloads/Drugs/GuidanceComplianceRegulatoryInformation/Guidances/UCM072392.pdf>.

The SPL will be accessible via publicly available labeling repositories.

### **CARTON AND IMMEDIATE CONTAINER LABELS**

We acknowledge your January 20, 2015, submission containing final printed carton and container labels.

### **REQUIRED PEDIATRIC ASSESSMENTS**

Under the Pediatric Research Equity Act (PREA) (21 U.S.C. 355c), all applications for new active ingredients, new indications, new dosage forms, new dosing regimens, or new routes of administration are required to contain an assessment of the safety and effectiveness of the product for the claimed indication(s) in pediatric patients unless this requirement is waived, deferred, or inapplicable.

We are deferring submission of your pediatric studies until June 2020, because this product is ready for approval for use in adults and the pediatric studies have not been completed.

Your deferred pediatric studies required under section 505B the Federal Food, Drug, and Cosmetic Act/FDCA are required postmarketing studies. The status of these postmarketing studies must be reported annually according to 21 CFR 314.81 and section 505B(a)(3)(C) of the FDCA. These required studies are listed below.

- 2862-1      Conduct a randomized multicenter, active-controlled trial to evaluate the safety and tolerability of AVYCAZ (ceftazidime-avibactam) in children from 3 months to less than 18 years of age with cUTI. The dose for this study will be determined upon review of the data to be submitted by June 2015 from a single-dose, multicenter, non-comparative study assessing the pharmacokinetics of AVYCAZ (ceftazidime-avibactam) in pediatric patients from 3 months to less than 18 years of age.

The timetable you submitted on February 11, 2015, states that you will conduct this study according to the following schedule:

|                            |         |
|----------------------------|---------|
| Final Protocol Submission: | 06/2015 |
| Study Completion:          | 09/2017 |
| Final Report Submission:   | 09/2018 |

- 2862-2      Conduct a randomized, multicenter, active-controlled trial to evaluate the safety and tolerability of AVYCAZ (ceftazidime-avibactam) in children from 3 months to less than 18 years of age with cIAI. The dose for this study will be determined upon review of the data to be submitted by June 2015 from a single-dose, multicenter, non-comparative study assessing the pharmacokinetics of AVYCAZ (ceftazidime-avibactam) in pediatric patients from 3 months to less than 18 years of age.

The timetable you submitted on February 11, 2015, states that you will conduct this study according to the following schedule:

|                            |         |
|----------------------------|---------|
| Final Protocol Submission: | 06/2015 |
| Study Completion:          | 09/2017 |
| Final Report Submission:   | 09/2018 |

2862-3 Conduct a trial to evaluate the pharmacokinetics, safety and tolerability of AVYCAZ (ceftazidime-avibactam) in children from birth to less than 3 months of age with late-onset sepsis.

The timetable you submitted on February 11, 2015, states that you will conduct this study according to the following schedule:

|                            |         |
|----------------------------|---------|
| Final Protocol Submission: | 06/2018 |
| Study Completion:          | 12/2019 |
| Final Report Submission:   | 12/2020 |

Submit the protocols to your IND 101307, with a cross-reference letter to this NDA.

Reports of these required pediatric postmarketing studies must be submitted as a NDA or as a supplement to your approved NDA with the proposed labeling changes you believe are warranted based on the data derived from these studies. When submitting the reports, please clearly mark your submission "**SUBMISSION OF REQUIRED PEDIATRIC ASSESSMENTS**" in large font, bolded type at the beginning of the cover letter of the submission.

### **POSTMARKETING REQUIREMENTS UNDER 505(o)**

Section 505(o)(3) of the FDCA authorizes FDA to require holders of approved drug and biological product applications to conduct postmarketing studies and clinical trials for certain purposes, if FDA makes certain findings required by the statute.

We have determined that an analysis of spontaneous postmarketing adverse events reported under subsection 505(k)(1) of the FDCA will not be sufficient to identify the serious risk of development of resistance to AVYCAZ (ceftazidime-avibactam) in organisms specific to the cIAI and cUTI indications in the label.

Furthermore, the new pharmacovigilance system that FDA is required to establish under section 505(k)(3) of the FDCA will not be sufficient to assess these serious risks.

Therefore, based on appropriate scientific data, FDA has determined that you are required to conduct the following:

- 2862-4 Conduct a prospective study over a five-year period after the introduction of AVYCAZ (ceftazidime-avibactam) to the market to determine if decreased susceptibility to AVYCAZ (ceftazidime-avibactam) is occurring in the target population of bacteria that are in the approved AVYCAZ (ceftazidime-avibactam) label.

The timetable you submitted on February 11, 2015, states that you will conduct this study according to the following schedule:

|                            |         |
|----------------------------|---------|
| Final Protocol Submission: | 09/2015 |
| First interim report:      | 05/2016 |
| Second interim report:     | 05/2017 |
| Third interim report:      | 05/2018 |
| Fourth interim report:     | 05/2019 |
| Fifth interim report:      | 05/2020 |
| Study completion:          | 02/2020 |
| Final report submission:   | 12/2020 |

Finally, we have determined that only a clinical trial (rather than a nonclinical or observational study) will be sufficient to assess the signal of a serious risk of higher mortality and decreased efficacy in patients with moderate renal impairment (creatinine clearance 30 to 50 mL/min) treated with AVYCAZ (ceftazidime-avibactam).

- 2862-5 Conduct a trial or submit data from the Phase 3 trial in cIAI to evaluate the pharmacokinetics, safety, and clinical outcomes in adult patients with baseline renal impairment (creatinine clearance of 50 mL/min or less) receiving AVYCAZ (ceftazidime-avibactam) dosing regimens adjusted for renal function.

The timetable you submitted on February 11, 2015 states that you will conduct this trial according to the following schedule:

|                            |           |
|----------------------------|-----------|
| Final Protocol Submission: | Submitted |
| Trial Completion:          | Completed |
| Final Report Submission:   | 12/2015   |

Submit the protocols to your IND 101307, with a cross-reference letter to this NDA. Submit all final reports to your NDA. Prominently identify the submission with the following wording in bold capital letters at the top of the first page of the submission, as appropriate: **“Required Postmarketing Protocol Under 505(o)”**, **“Required Postmarketing Final Report Under 505(o)”**, **“Required Postmarketing Correspondence Under 505(o)”**.

Section 505(o)(3)(E)(ii) of the FDCA requires you to report periodically on the status of any study or clinical trial required under this section. This section also requires you to periodically report to FDA on the status of any study or clinical trial otherwise undertaken to investigate a

safety issue. Section 506B of the FDCA, as well as 21 CFR 314.81(b)(2)(vii) requires you to report annually on the status of any postmarketing commitments or required studies or clinical trials.

FDA will consider the submission of your annual report under section 506B and 21 CFR 314.81(b)(2)(vii) to satisfy the periodic reporting requirement under section 505(o)(3)(E)(ii) provided that you include the elements listed in 505(o) and 21 CFR 314.81(b)(2)(vii).

We remind you that to comply with 505(o), your annual report must also include a report on the status of any study or clinical trial otherwise undertaken to investigate a safety issue. Failure to submit an annual report for studies or clinical trials required under 505(o) on the date required will be considered a violation of FDCA section 505(o)(3)(E)(ii) and could result in enforcement action.

### **PROMOTIONAL MATERIALS**

You may request advisory comments on proposed introductory advertising and promotional labeling. To do so, submit, in triplicate, a cover letter requesting advisory comments, the proposed materials in draft or mock-up form with annotated references, and the package insert to:

Food and Drug Administration  
Center for Drug Evaluation and Research  
Office of Prescription Drug Promotion  
5901-B Ammendale Road  
Beltsville, MD 20705-1266

As required under 21 CFR 314.81(b)(3)(i), you must submit final promotional materials, and the package insert, at the time of initial dissemination or publication, accompanied by a Form FDA 2253. Form FDA 2253 is available at

<http://www.fda.gov/downloads/AboutFDA/ReportsManualsForms/Forms/UCM083570.pdf>.

Information and Instructions for completing the form can be found at

<http://www.fda.gov/downloads/AboutFDA/ReportsManualsForms/Forms/UCM375154.pdf>. For more information about submission of promotional materials to the Office of Prescription Drug Promotion (OPDP), see <http://www.fda.gov/AboutFDA/CentersOffices/CDER/ucm090142.htm>.

### **METHODS VALIDATION**

We have not completed validation of the regulatory methods. However, we expect your continued cooperation to resolve any problems that may be identified.

### **REPORTING REQUIREMENTS**

We remind you that you must comply with reporting requirements for an approved NDA (21 CFR 314.80 and 314.81).



### **MEDWATCH-TO-MANUFACTURER PROGRAM**

The MedWatch-to-Manufacturer Program provides manufacturers with copies of serious adverse event reports that are received directly by the FDA. New molecular entities and important new biologics qualify for inclusion for three years after approval. Your firm is eligible to receive copies of reports for this product. To participate in the program, please see the enrollment instructions and program description details at <http://www.fda.gov/Safety/MedWatch/HowToReport/ucm166910.htm>.

### **POST APPROVAL FEEDBACK MEETING**

New molecular entities and new biologics qualify for a post approval feedback meeting. Such meetings are used to discuss the quality of the application and to evaluate the communication process during drug development and marketing application review. The purpose is to learn from successful aspects of the review process and to identify areas that could benefit from improvement. If you would like to have such a meeting with us, call the Regulatory Project Manager for this application.

### **PDUFA V APPLICANT INTERVIEW**

FDA has contracted with Eastern Research Group, Inc. (ERG) to conduct an independent interim and final assessment of the Program for Enhanced Review Transparency and Communication for NME NDAs and Original BLAs under PDUFA V ('the Program'). The PDUFA V Commitment Letter states that these assessments will include interviews with applicants following FDA action on applications reviewed in the Program. For this purpose, first-cycle actions include approvals, complete responses, and withdrawals after filing. The purpose of the interview is to better understand applicant experiences with the Program and its ability to improve transparency and communication during FDA review.

ERG will contact you to schedule a PDUFA V applicant interview and provide specifics about the interview process. Your responses during the interview will be confidential with respect to the FDA review team. ERG has signed a non-disclosure agreement and will not disclose any identifying information to anyone outside their project team. They will report only anonymized results and findings in the interim and final assessments. Members of the FDA review team will be interviewed by ERG separately. While your participation in the interview is voluntary, your feedback will be helpful to these assessments.

If you have any questions, call Carmen DeBellas, Regulatory Project Manager, at (301) 796-1203.

Sincerely,

*{See appended electronic signature page}*

Edward M. Cox, MD, MPH  
Director  
Office of Antimicrobial Products  
Center for Drug Evaluation and Research

Enclosures:

Content of Labeling  
Carton and Container Labeling

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**This is a representation of an electronic record that was signed electronically and this page is the manifestation of the electronic signature.**  
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/s/  
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EDWARD M COX  
02/25/2015