CENTER FOR DRUG EVALUATION AND RESEARCH

APPLICATION NUMBER:

125477Orig1s000

PROPRIETARY NAME REVIEW(S)

Department of Health and Human Services
Public Health Service
Food and Drug Administration
Center for Drug Evaluation and Research
Office of Surveillance and Epidemiology
Office of Medication Error Prevention and Risk Management

Proprietary Name Review

Date:	October 25, 2013
Reviewer:	Jibril Abdus-Samad, PharmD Division of Medication Error Prevention and Analysis
Team Leader:	Todd Bridges, RPh Division of Medication Error Prevention and Analysis
Drug Name and Strength:	Cyramza (Ramucirumab) Injection 100 mg/10 mL and 500 mg/50 mL
Application Type/Number:	BLA 125477
Applicant/Sponsor:	Eli Lilly and Company
OSE RCM #:	2013-1964

*** This document contains proprietary and confidential information that should not be released to the public.***

CONTENTS

1 INTRODUCTION

This review evaluates the proposed proprietary name, Cyramza, from a safety and promotional perspective. The sources and methods used to evaluate the proposed name are outlined in the reference section and Appendix A, respectively.

1.1 REGULATORY HISTORY

Cyramza was found conditionally acceptable on March 15, 2013 in OSE Review 2012-2274 under IND 011856. On August 23, 2013, the Applicant submitted a Request for Proprietary Name Review under BLA 125477, which is the subject of this review. Since the last review, the Applicant updated the dosage recommendations to provide for dose modifications for proteinuria (see Section 1.2).

1.2 PRODUCT INFORMATION

The following product information is provided in the August 23, 2013, proprietary name submission.

- Active Ingredient: Ramucirimab
- Indication of Use: Advanced gastric cancer or gastro-esophageal junction adenocarcinoma, as a single-agent after prior chemotherapy
- Route of Administration: Intravenous infusion
- Dosage Form: Injection
- Strength: 100 mg/10 mL and 500 mg/50 mL
- Dose and Frequency:

  Usual Dose:
  8 mg/kg every 2 weeks administered as an intravenous infusion over approximately 60 minutes ((b) (4)

  Dose Modification:

  - Infusion Rate Reaction: reduce infusion rate by 50%
  - Proteinuria:
    6 mg/kg once the urine protein level returns to normal

    5 mg/kg if a urine protein level greater than or equal to 2 g/24 hours reoccurs
- How Supplied: 100 mg/10 mL and 500 mg/50 mL single-dose vials. Sterile, injectable solution for intravenous infusion. Containing no preservatives.
- Storage: store in a refrigerator at 2°C to 8°C (36°F to 46°F) until time of use. Keep the vial in the outer carton in order to protect from light. Do not freeze or shake the vial.
- Container and Closure Systems: glass vial.

2 RESULTS

The following sections provide information obtained and considered in the overall evaluation of the proposed proprietary name.

2.1 PROMOTIONAL ASSESSMENT

The Office of Prescription Drug Promotion (OPDP) determined the proposed name is acceptable from a promotional perspective. DMEPA and the Division of Oncology Products II (DOP2) concurred with the findings of OPDP's promotional assessment of the proposed name.

2.2 SAFETY ASSESSMENT

The following aspects were considered in the safety evaluation of the name.

2.2.1 United States Adopted Names (USAN) Search

The October 4, 2013 search of the United States Adopted Name (USAN) stems did not identify that a USAN stem is present in the proposed proprietary name.

2.2.2 Components of the Proposed Proprietary Name

The Applicant indicated in their submission that the proposed name, Cyramza, is not a derivation. This proprietary name is comprised of a single word that does not contain any components (i.e., a modifier, route of administration, dosage form, etc.) that are misleading or can contribute to medication error.

2.2.4 FDA Name Simulation Studies

Sixty-four practitioners participated in DMEPA's prescription studies. The interpretations did not overlap with any currently marketed products. However, one misinterpretation, Xyremsa, sounds similar to any currently marketed products, Xyrem. Xyrem is included in the Collective List of Potentially Similar Names (see Table 1).

In the Outpatient study, the most common misinterpretation was of the letter 'y' from the letter 'z'. In the Inpatient Study, the most common misinterpretation was the letter 's' for the letter 'z'. The most common misinterpretation in the Voice Study was the letter 'S' for the letter 'Z'. We have considered these variations in our look-alike and sound-alike searches and analysis (see Appendix B). See Appendix C for the complete listing of interpretations from the verbal and written prescription studies.

2.2.5 Comments from Other Review Disciplines at Initial Phase of Review

In response to the OSE, September 13, 2013 e-mail, the DOP2 did not forward any comments or concerns relating to the proposed proprietary name at the initial phase of the review.

2.2.6 Failure Mode and Effects Analysis of Similar Names

Appendix B lists possible orthographic and phonetic misinterpretations of the letters appearing in the proposed proprietary name, Cyramza. Table 1 lists the names with orthographic, phonetic, or spelling similarity to the proposed proprietary name, Cyramza identified by the primary reviewer, the Expert Panel Discussion (EPD), FDA Prescription Simulation, and other review disciplines.

Additionally, Appendices F and G contain the list of the names previously identified and evaluated in OSE Review 2012-2274. These names were reevaluated due to the new dosage modifications (5 mg/kg and 6 mg/kg). However, we still agree with the previous review's conclusions. None of the previously reviewed names are of concern.

Table 1: Collective List of Potentially Similar Names

Look Similar					
Name	***Source***	***Name***	***Source***	***Name***	***Source***
Aplenzin	Primary Reviewer	Cipro XR	EPD	Eperzan***	Primary Reviewer
Gemzar	Primary Reviewer	GyMiso	Primary Reviewer	Lyramycin	EPD
(b) (4)	Primary Reviewer				
Sound Similar					
Name	***Source***	***Name***	***Source***	***Name***	***Source***
(b) (4)	Primary Reviewer	Kynamro	EPD	(b) (4)	Primary Reviewer
Xyrem	Primary Reviewer				

*** This document contains proprietary and confidential information that should not be released to the public.***

Our analysis of the 11 names contained in Table 1 considered the information obtained in the previous sections along with their product characteristics. We determined 11 names will not pose a risk for confusion as described in Appendices D through E.

2.2.7 Communication of DMEPA's Analysis at Midpoint of Review

DMEPA communicated our findings to the DOP2 via e-mail on October 9, 2013. At that time we also requested additional information or concerns that could inform our review. Per e-mail correspondence from the DOP2 on October 10, 2013, they stated no additional concerns with the proposed proprietary name, Cyramza.

3 CONCLUSIONS

The proposed proprietary name is acceptable from both a promotional and safety perspective.

If you have questions or need clarifications, please contact Sue Kang, OSE project manager, at 301-796-4216.

3.1 COMMENTS TO THE APPLICANT

We have completed our review of the proposed proprietary name, Cyramza, and have concluded that this name is acceptable.

If any of the proposed product characteristics as stated in your August 23, 2013, submission are altered prior to approval of the marketing application, the proprietary name must be resubmitted for review.

4 REFERENCES

1. Micromedex Integrated Index (***http://csi.micromedex.com***)

   Micromedex contains a variety of databases covering pharmacology, therapeutics, toxicology and diagnostics.

2. ***Phonetic and Orthographic Computer Analysis (POCA)***

   POCA is a database which was created for the Division of Medication Error Prevention and Analysis, FDA. As part of the name similarity assessment, proposed names are evaluated via a phonetic/orthographic algorithm. The proposed proprietary name is converted into its phonemic representation before it runs through the phonetic algorithm. Likewise, an orthographic algorithm exists which operates in a similar fashion.

3. Drug Facts and Comparisons, online version, St. Louis, MO (***http://factsandcomparisons.com***)

   Drug Facts and Comparisons is a compendium organized by therapeutic course; it contains monographs on prescription and OTC drugs, with charts comparing similar products. This database also lists the orphan drugs.

4. ***FDA Document Archiving, Reporting & Regulatory Tracking System [DARRTS]***

   DARRTS is a government database used to organize Applicant and Sponsor submissions as well as to store and organize assignments, reviews, and communications from the review divisions.

5. ***Division of Medication Errors Prevention and Analysis proprietary name consultation requests***

   This is a list of proposed and pending names that is generated by the Division of Medication Error Prevention and Analysis from the Access database/tracking system.

6. Drugs@FDA (***http://www.accessdata.fda.gov/scripts/cder/drugsatfda/index.cfm***)

   Drugs@FDA contains most of the drug products approved since 1939. The majority of labels, approval letters, reviews, and other information are available for drug products approved from 1998 to the present. Drugs@FDA contains official information about FDA approved brand name, generic drugs, therapeutic biological products, prescription and over-the-counter human drugs and discontinued drugs and "Chemical Type 6" approvals.

7. ***U.S. Patent and Trademark Office (*http://www.uspto.gov*)***

   USPTO provides information regarding patent and trademarks.

8. ***Clinical Pharmacology Online (www.clinicalpharmacology-ip.com)***

   Clinical Pharmacology contains full monographs for the most common drugs in clinical use, plus mini monographs covering investigational, less common,

combination, nutraceutical and nutritional products. It also provides a keyword search engine.

9. ***Natural Medicines Comprehensive Databases (www.naturaldatabase.com)***

   Natural Medicines contains up-to-date clinical data on the natural medicines, herbal medicines, and dietary supplements used in the western world.

10. ***Access Medicine (www.accessmedicine.com)***

    Access Medicine® from McGraw-Hill contains full-text information from approximately 60 titles; it includes tables and references. Among the titles are: Harrison's Principles of Internal Medicine, Basic & Clinical Pharmacology, and Goodman and Gilman's The Pharmacologic Basis of Therapeutics.

11. ***USAN Stems (http://www.ama-assn.org/ama/pub/about-ama/our-people/coalitions-consortiums/united-states-adopted-names-council/naming-guidelines/approved-stems.shtml)***

    USAN Stems List contains all the recognized USAN stems.

12. ***Red Book (www.thomsonhc.com/home/dispatch)***

    Red Book contains prices and product information for prescription, over-the-counter drugs, medical devices, and accessories.

13. ***Lexi-Comp (www.lexi.com)***

    Lexi-Comp is a web-based searchable version of the Drug Information Handbook.

14. ***Medical Abbreviations (www.medilexicon.com)***

    Medical Abbreviations dictionary contains commonly used medical abbreviations and their definitions.

15. ***CVS/Pharmacy (www.CVS.com)***

    This database contains commonly used over the counter products not usually identified in other databases.

16. ***Walgreens (www.walgreens.com)***

    This database contains commonly used over the counter products not usually identified in other databases.

17. ***Rx List (www.rxlist.com)***

    RxList is an online medical resource dedicated to offering detailed and current pharmaceutical information on brand and generic drugs.

18. Dogpile (www.dogpile.com)

Dogpile is a Metasearch engine that searches multiple search engines including Google, Yahoo! and Bing, and returns the most relevant results to the search.

19. Natural Standard (http://www.naturalstandard.com)

Natural Standard is a resource that aggregates and synthesizes data on complementary and alternative medicine.

APPENDICES

Appendix A

FDA's Proprietary Name Risk Assessment considers the promotional and safety aspects of a proposed proprietary name. The promotional review of the proposed name is conducted by OPDP. OPDP evaluates proposed proprietary names to determine if they are overly fanciful, so as to misleadingly imply unique effectiveness or composition, as well as to assess whether they contribute to overstatement of product efficacy, minimization of risk, broadening of product indications, or making of unsubstantiated superiority claims. OPDP provides their opinion to DMEPA for consideration in the overall acceptability of the proposed proprietary name.

The safety assessment is conducted by DMEPA. DMEPA staff search a standard set of databases and information sources to identify names that are similar in pronunciation, spelling, and orthographically similar when scripted to the proposed proprietary name. Additionally, we consider inclusion of USAN stems or other characteristics that when incorporated into a proprietary name may cause or contribute to medication errors (i.e., dosing interval, dosage form/route of administration, medical or product name abbreviations, names that include or suggest the composition of the drug product, etc.). DMEPA defines a medication error as any preventable event that may cause or lead to inappropriate medication use or patient harm while the medication is in the control of the health care professional, patient, or consumer. [1]

Following the preliminary screening of the proposed proprietary name, DMEPA gathers to discuss their professional opinions on the safety of the proposed proprietary name. This meeting is commonly referred to the Center for Drug Evaluation and Research (CDER) Expert Panel discussion. DMEPA also considers other aspects of the name that may be misleading from a safety perspective. DMEPA staff conducts a prescription simulation studies using FDA health care professionals. When provided, DMEPA considers external proprietary name studies conducted by or for the Applicant/Sponsor and incorporates the findings of these studies into the overall risk assessment.

The DMEPA primary reviewer assigned to evaluate the proposed proprietary name is responsible for considering the collective findings, and provides an overall risk assessment of the proposed proprietary name. DMEPA bases the overall risk assessment on the findings of a Failure Mode and Effects Analysis (FMEA) of the proprietary name and misleading nature of the proposed proprietary name with a focus on the avoidance of medication errors.

DMEPA uses the clinical expertise of its staff to anticipate the conditions of the clinical setting where the product is likely to be used based on the characteristics of the proposed product. DMEPA considers the product characteristics associated with the proposed product throughout the risk assessment because the product characteristics of the proposed may provide a context for communication of the drug name and ultimately determine the use of the product in the *usual* clinical practice setting.

---

[1] National Coordinating Council for Medication Error Reporting and Prevention. http://www nccmerp.org/aboutMedErrors html. Last accessed 10/11/2007.

Typical product characteristics considered when identifying drug names that could potentially be confused with the proposed proprietary name include, but are not limited to; established name of the proposed product, proposed indication of use, dosage form, route of administration, strength, unit of measure, dosage units, recommended dose, typical quantity or volume, frequency of administration, product packaging, storage conditions, patient population, and prescriber population. DMEPA considers how these product characteristics may or may not be present in communicating a product name throughout the medication use system. Because drug name confusion can occur at any point in the medication use process, DMEPA considers the potential for confusion throughout the entire U.S. medication use process, including drug procurement, prescribing and ordering, dispensing, administration, and monitoring the impact of the medication.[2]

The DMEPA considers the spelling of the name, pronunciation of the name when spoken, and appearance of the name when scripted. DMEPA compares the proposed proprietary name with the proprietary and established name of existing and proposed drug products and names currently under review at the FDA. DMEPA compares the pronunciation of the proposed proprietary name with the pronunciation of other drug names because verbal communication of medication names is common in clinical settings. DMEPA examines the phonetic similarity using patterns of speech. If provided, DMEPA will consider the Sponsor's intended pronunciation of the proprietary name. However, DMEPA also considers a variety of pronunciations that could occur in the English language because the Sponsor has little control over how the name will be spoken in clinical practice. The orthographic appearance of the proposed name is evaluated using a number of different handwriting samples. DMEPA applies expertise gained from root-cause analysis of postmarketing medication errors to identify sources of ambiguity within the name that could be introduced when scripting (e.g.,"T" may look like "F," lower case 'a' looks like a lower case 'u,' etc). Additionally, other orthographic attributes that determine the overall appearance of the drug name when scripted (see Table 1 below for details).

[2] Institute of Medicine. Preventing Medication Errors. The National Academies Press: Washington DC. 2006.

Table 1. Criteria Used to Identify Drug Names that Look- or Sound-Similar to a Proposed Proprietary Name.

Type of Similarity	**Considerations when Searching the Databases**		
	Potential Causes of Drug Name Similarity	*Attributes Examined to Identify Similar Drug Names*	*Potential Effects*
Look-alike	Similar spelling	Identical prefix Identical infix Identical suffix Length of the name Overlapping product characteristics	• Names may appear similar in print or electronic media and lead to drug name confusion in printed or electronic communication • Names may look similar when scripted and lead to drug name confusion in written communication
	Orthographic similarity	Similar spelling Length of the name/Similar shape Upstrokes Down strokes Cross-strokes Dotted letters Ambiguity introduced by scripting letters Overlapping product characteristics	• Names may look similar when scripted, and lead to drug name confusion in written communication
Sound-alike	Phonetic similarity	Identical prefix Identical infix Identical suffix Number of syllables Stresses Placement of vowel sounds Placement of consonant sounds Overlapping product characteristics	• Names may sound similar when pronounced and lead to drug name confusion in verbal communication

Lastly, DMEPA considers the potential for the proposed proprietary name to inadvertently function as a source of error for reasons other than name confusion. Post-marketing experience has demonstrated that proprietary names (or components of the proprietary name) can be a source of error in a variety of ways. Consequently, DMEPA considers and evaluates these broader safety implications of the name throughout this assessment and the medication error staff provides additional comments related to the

safety of the proposed proprietary name or product based on professional experience with medication errors.

1. Database and Information Sources

DMEPA searches the internet, several standard published drug product reference texts, and FDA databases to identify existing and proposed drug names that may sound-alike or look-alike to the proposed proprietary name. A standard description of the databases used in the searches is provided in the reference section of this review. To complement the process, the DMEPA uses a computerized method of identifying phonetic and orthographic similarity between medication names. The program, Phonetic and Orthographic Computer Analysis (POCA), uses complex algorithms to select a list of names from a database that have some similarity (phonetic, orthographic, or both) to the trademark being evaluated. Lastly, DMEPA reviews the USAN stem list to determine if any USAN stems are present within the proprietary name. The individual findings of multiple safety evaluators are pooled and presented to the CDER Expert Panel. DMEPA also evaluates if there are characteristics included in the composition that may render the name unacceptable from a safety perspective (abbreviation, dosing interval, etc.).

2. Expert Panel Discussion

DMEPA gathers gather CDER professional opinions on the safety of the proposed product and discussed the proposed proprietary name (Expert Panel Discussion). The Expert Panel is composed of Division of Medication Errors Prevention (DMEPA) staff and representatives from the Office of Prescription Drug Promotion (OPDP). We also consider input from other review disciplines (OND, ONDQA/OBP). The Expert Panel also discusses potential concerns regarding drug marketing and promotion related to the proposed names.

The primary Safety Evaluator presents the pooled results of the database and information searches to the Expert Panel for consideration. Based on the clinical and professional experiences of the Expert Panel members, the Panel may recommend additional names, additional searches by the primary Safety Evaluator to supplement the pooled results, or general advice to consider when reviewing the proposed proprietary name.

3. FDA Prescription Simulation Studies

Three separate studies are conducted within the Centers of the FDA for the proposed proprietary name to determine the degree of confusion of the proposed proprietary name with marketed U.S. drug names (proprietary and established) due to similarity in visual appearance with handwritten prescriptions or verbal pronunciation of the drug name. The studies employ healthcare professionals (pharmacists, physicians, and nurses), and attempts to simulate the prescription ordering process. The primary Safety Evaluator uses the results to identify orthographic or phonetic vulnerability of the proposed name to be misinterpreted by healthcare practitioners.

In order to evaluate the potential for misinterpretation of the proposed proprietary name in handwriting and verbal communication of the name, inpatient medication orders and/or outpatient prescriptions are written, each consisting of a combination of marketed and unapproved drug products, including the proposed name. These orders are optically

scanned and one prescription is delivered to a random sample of participating health professionals via e-mail. In addition, a verbal prescription is recorded on voice mail. The voice mail messages are then sent to a random sample of the participating health professionals for their interpretations and review. After receiving either the written or verbal prescription orders, the participants record their interpretations of the orders which are recorded electronically.

4. Comments from Other Review Disciplines

DMEPA requests the Office of New Drugs (OND) and/or Office of Generic Drugs (OGD), ONDQA or OBP for their comments or concerns with the proposed proprietary name, ask for any clinical issues that may impact the DMEPA review during the initial phase of the name review. Additionally, when applicable, at the same time DMEPA requests concurrence/non-concurrence with OPDP's decision on the name. The primary Safety Evaluator addresses any comments or concerns in the safety evaluator's assessment.

The OND/OGD Regulatory Division is contacted a second time following our analysis of the proposed proprietary name. At this point, DMEPA conveys their decision to accept or reject the name. The OND or OGD Regulatory Division is requested to provide any further information that might inform DMEPA's final decision on the proposed name.

Additionally, other review disciplines opinions such as ONDQA or OBP may be considered depending on the proposed proprietary name.

5. Safety Evaluator Risk Assessment of the Proposed Proprietary Name

The primary Safety Evaluator applies his/her individual expertise gained from evaluating medication errors reported to FDA, considers all aspects of the name that may be misleading or confusing, conducts a Failure Mode and Effects Analysis, and provides an overall decision on acceptability dependent on their risk assessment of name confusion. Failure Mode and Effects Analysis (FMEA) is a systematic tool for evaluating a process and identifying where and how it might fail.[3] When applying FMEA to assess the risk of a proposed proprietary name, DMEPA seeks to evaluate the potential for a proposed proprietary name to be confused with another drug name because of name confusion and, thereby, cause errors to occur in the medication use system. FMEA capitalizes on the predictable and preventable nature of medication errors associated with drug name confusion. FMEA allows the Agency to identify the potential for medication errors due to orthographically or phonetically similar drug names prior to approval, where actions to overcome these issues are easier and more effective than remedies available in the post-approval phase.

In order to perform an FMEA of the proposed name, the primary Safety Evaluator must analyze the use of the product at all points in the medication use system. Because the proposed product is has not been marketed, the primary Safety Evaluator anticipates the use of the product in the usual practice settings by considering the clinical and product

[3] Institute for Healthcare Improvement (IHI). Failure Mode and Effects Analysis. Boston. IHI:2004.

characteristics listed in Section 1.2 of this review. The Safety Evaluator then analyzes the proposed proprietary name in the context of the usual practice setting and works to identify potential failure modes and the effects associated with the failure modes.

In the initial stage of the Risk Assessment, the Safety Evaluator compares the proposed proprietary name to all of the names gathered from the above searches, Expert Panel Discussion, and prescription studies, external studies, and identifies potential failure modes by asking:

> ***"Is the proposed proprietary name convincingly similar to another drug name, which may cause practitioners to become confused at any point in the usual practice setting? And are there any components of the name that may function as a source of error beyond sound/look-alike?"***

An affirmative answer indicates a failure mode and represents a potential for the proposed proprietary name to be confused with another proprietary or established drug name because of look- or sound-alike similarity or because of some other component of the name. If the answer to the question is no, the Safety Evaluator is not convinced that the names posses similarity that would cause confusion at any point in the medication use system, thus the name is eliminated from further review.

In the second stage of the Risk Assessment, the primary Safety Evaluator evaluates all potential failure modes to determine the likely *effect* of the drug name confusion, by asking:

> ***"Could the confusion of the drug names conceivably result in medication errors in the usual practice setting?"***

The answer to this question is a central component of the Safety Evaluator's overall risk assessment of the proprietary name. If the Safety Evaluator determines through FMEA that the name similarity would not ultimately be a source of medication errors in the usual practice setting, the primary Safety Evaluator eliminates the name from further analysis. However, if the Safety Evaluator determines through FMEA that the name similarity could ultimately cause medication errors in the usual practice setting, the Safety Evaluator will then recommend the use of an alternate proprietary name.

Moreover, DMEPA will object to the use of proposed proprietary name when the primary Safety Evaluator identifies one or more of the following conditions in the Overall Risk Assessment:

a. OPDP finds the proposed proprietary name misleading from a promotional perspective, and the Review Division concurs with OPDP's findings. The Federal Food, Drug, and Cosmetic Act provides that labeling or advertising can misbrand a product if misleading representations are made or suggested by statement, word, design, device, or any combination thereof, whether through a PROPRIETARY name or otherwise [21 U.S.C 321(n); See also 21 U.S.C. 352(a) & (n)].

b. DMEPA identifies that the proposed proprietary name is misleading because of similarity in spelling or pronunciation to another proprietary or established name of a different drug or ingredient [CFR 201.10.(C)(5)].

c. FMEA identifies the potential for confusion between the proposed proprietary name and other proprietary or established drug name(s), and demonstrates that medication errors are likely to result from the drug name confusion under the conditions of usual clinical practice.

d. The proposed proprietary name contains an USAN (United States Adopted Names) stem.

e. DMEPA identifies a potential source of medication error within the proposed proprietary name. For example, the proprietary name may be misleading or, inadvertently, introduce ambiguity and confusion that leads to errors. Such errors may not necessarily involve confusion between the proposed drug and another drug product but involve a naming characteristic that when incorporated into a proprietary name, may be confusing, misleading, cause or contribute to medication errors.

If DMEPA objects to a proposed proprietary name on the basis that drug name confusion could lead to medication errors, the primary Safety Evaluator uses the FMEA process to identify strategies to reduce the risk of medication errors. DMEPA generally recommends that the Sponsor select an alternative proprietary name and submit the alternate name to the Agency for review. However, in rare instances FMEA may identify plausible strategies that could reduce the risk of medication error of the currently proposed name. In that instance, DMEPA may be able to provide the Sponsor with recommendations that reduce or eliminate the potential for error and, thereby, would render the proposed name acceptable.

In the event that DMEPA objects to the use of the proposed proprietary name, based upon the potential for confusion with another proposed (but not yet approved) proprietary name, DMEPA will provide a contingency objection based on the date of approval. Whichever product, the Agency approves first has the right to use the proprietary name, while DMEPA will recommend that the second product to reach approval seek an alternative name.

The threshold set for objection to the proposed proprietary name may seem low to the Applicant/Sponsor. However, the safety concerns set forth in criteria a through e above are supported either by FDA regulation or by external healthcare authorities, including the Institute of Medicine (IOM), World Health Organization (WHO), the Joint Commission, and the Institute for Safe Medication Practices (ISMP). These organizations have examined medication errors resulting from look- or sound-alike drug names, confusing, or misleading names and called for regulatory authorities to address the issue prior to approval. Additionally, DMEPA contends that the threshold set for the Proprietary Name Risk Assessment is reasonable because proprietary drug name confusion is a predictable and preventable source of medication error that, in many instances, the Agency and/or Sponsor can identify and rectify prior to approval to avoid patient harm.

Furthermore, post-marketing experience has demonstrated that medication errors resulting from drug name confusion are notoriously difficult to rectify post-approval. Educational and other post-approval efforts are low-leverage strategies that have had limited effectiveness at alleviating medication errors involving drug name confusion. Sponsors have undertaken higher-leverage strategies, such as drug name changes, in the

past but at great financial cost to the Sponsor and at the expense of the public welfare, not to mention the Agency's credibility as the authority responsible for approving the error-prone proprietary name. Moreover, even after Sponsors' have changed a product's proprietary name in the post-approval phase, it is difficult to eradicate the original proprietary name from practitioners' vocabulary, and as a result, the Agency has continued to receive reports of drug name confusion long after a name change in some instances. Therefore, DMEPA believes that post-approval efforts at reducing name confusion errors should be reserved for those cases in which the potential for name confusion could not be predicted prior to approval.

Appendix B: Letters and Letter Strings with Possible Orthographic or Phonetic Misinterpretation

Letters in Name, Cyramza	Scripted May Appear as	Spoken May Be Interpreted as
Capital 'C'	A, G, L, O, U	K, S, X, Z
lowercase 'c'	a, e, i, l	k, s, x, z
lowercase 'y'	f, g, p, u, v, x, z	e, i, u
lowercase 'r'	c, e, n, s, v	wr
lowercase 'a'	ce, ci, d, el, o, u	any vowel
lowercase 'm'	n, nn, onc, rn, v, w, wi, vi, z	n
lowercase 'z'	c, e, g, m, n, q, r, s, v, y	c, s, x, z
Letter Strings		
yr	Cip	

Appendix C: Prescription Simulation Samples and Results

Figure 1. Cyramza Study (Conducted on September 20, 2013)

Handwritten Medication Order	Verbal Prescription
Medication Order: Cyramza 720mg iv over 1 hr Outpatient Prescription: Cyramza 500mg Bring to Clinic #2	Cyramza 500 mg Bring to clinic Dispense #2

FDA Prescription Simulation Responses (Aggregate 1 Rx Studies Report)

189 People Received Study
64 People Responded

Study Name: Cyramza

Total	23	22	19	
INTERPRETATION	**OUTPATIENT**	**VOICE**	**INPATIENT**	**TOTAL**
Craymos	0	0	1	1
Cyamya	1	0	0	1
Cyamza	1	0	0	1
Cyanga	1	0	0	1
Cynamga	2	0	0	2
Cynamia	0	0	1	1
Cynamza	1	0	0	1
Cynarma	0	0	1	1

Cyrama	0	0	1	1
Cyramga	8	0	0	8
Cyramma	0	0	1	1
Cyramra	0	0	1	1
Cyramsa	0	2	3	5
Cyramya	1	0	0	1
Cyramza	7	5	2	14
Cyraniga	1	0	0	1
Cysamia	0	0	1	1
Cysamra	0	0	1	1
Cysamsa	0	0	2	2
Cytrmra	0	0	1	1
Cyvamsa	0	0	1	1
Cyvamza	0	0	1	1
Cyzamza	0	0	1	1
Saramsa	0	1	0	1
Sighramsza	0	1	0	1
Siramsa	0	2	0	2
Siramza	0	4	0	4
Syrama	0	1	0	1
Syramsa	0	1	0	1
Syramza	0	1	0	1
Syremza	0	1	0	1
Xyremsa	0	1	0	1
Ziramza	0	1	0	1
Zyranza	0	1	0	1

Appendix D: Proprietary names not likely to be confused or not used in usual practice settings for the reasons described.

No.	Proprietary Name	Active Ingredient	Similarity to Cyramza	Failure preventions
1.	GyMiso	Misoprostol	Look	Identified in Orphan Drug List. No pending NDA or commercial IND within the agency. Available in Australia.
2.	Lyramycin	Gentamicin	Look	Foreign Drug
3.	(b) (4)	(b) (4)	Look	(b) (4) found unacceptable. Alternate name is under review.
4.	Kynamro	Mipomersen Sodium	Sound	The pair have sufficient orthographic and/or phonetic differences
5.	(b) (4)	(b) (4)	Sound	Alternate name for NDA that was approved with proprietary name *Prolensa*.

*** This document contains proprietary and confidential information that should not be released to the public.***

Appendix E: Risk of medication errors due to product confusion minimized by dissimilarity of the names and/or use in clinical practice for the reasons described.

No.	**Proposed name: Cyramza (Ramucirumab)** **Dosage Form: Injection** **Strengths: 100 mg/10 mL and 500 mg/50 mL** **Usual Dose: 5 mg/kg, 6 mg/kg, or 8 mg/kg via intravenous infusion every 2 weeks (dose range 50 kg to 115 kg = 250 mg to 920 mg)**	**Failure Mode: Incorrect Product Ordered/ Selected/Dispensed or Administered because of Name confusion** **Causes (could be multiple)**	**Prevention of Failure Mode** **In the conditions outlined below, the following combination of factors, are expected to minimize the risk of confusion between these two names**
1.	Aplenzin (Bupropion HBr) 174 mg, 348 mg, 522 mg extended-release tablets Usual Dose: 1 tablet once daily	**Orthographic similarities** - Both names contain letters that appear similar when scripted ('Ap-' vs. 'Cyr-', '-nz-' vs. '-mz-')	**Orthographic differences** - Aplenzin contains the upstroke letters 'l'. **Product Characteristic Differences** - Strength: 174 mg, 348 mg, 522 mg vs. 100 mg/10 mL, 500 mg/50 mL
2.	Cipro XR (Ciprofloxacin) 500 mg, 1000 mg extended-release tablet Usual Dose: 1 tablet once daily	**Orthographic similarities** - Both names share letters that appear similar when scripted ('Cip-' vs. 'Cyr') **Overlapping product characteristics** - Overlapping Dose: 500 mg	**Orthographic differences** - The endings of the names differ ('-ro XR' vs. 'amza')

No.	Proposed name: Cyramza (Ramucirumab) Dosage Form: Injection Strengths: 100 mg/10 mL and 500 mg/50 mL Usual Dose: 5 mg/kg, 6 mg/kg, or 8 mg/kg via intravenous infusion every 2 weeks (dose range 50 kg to 115 kg = 250 mg to 920 mg)	Failure Mode: Incorrect Product Ordered/ Selected/Dispensed or Administered because of Name confusion Causes (could be multiple)	Prevention of Failure Mode In the conditions outlined below, the following combination of factors, are expected to minimize the risk of confusion between these two names
3.	Eperzan*** (Albiglutide) 30 mg, 50 mg powder for injection Usual Dose: 30 mg or 50 mg subcutaneously once weekly	**Orthographic similarities** - Both names share letters that appear similar when scripted ('ep-' vs. 'cyr', '-erza-' vs. '-mza') **Overlapping product characteristics** - injectable products - Numerically similar strengths: 50 mg vs. 500 mg	**Orthographic differences** - The initial letters must be written in lowercase for them to appear similar. - Eperzan*** contains an additional letter 'n' at the end. - Eperzan*** found unacceptable, alternate name under review

*** This document contains proprietary and confidential information that should not be released to the public.***

No.	Proposed name: Cyramza (Ramucirumab) Dosage Form: Injection Strengths: 100 mg/10 mL and 500 mg/50 mL Usual Dose: 5 mg/kg, 6 mg/kg, or 8 mg/kg via intravenous infusion every 2 weeks (dose range 50 kg to 115 kg = 250 mg to 920 mg)	Failure Mode: Incorrect Product Ordered/ Selected/Dispensed or Administered because of Name confusion Causes (could be multiple)	Prevention of Failure Mode In the conditions outlined below, the following combination of factors, are expected to minimize the risk of confusion between these two names
4.	Gemzar (Gemcitabine) 200 mg, 1 g, 2 g injection Usual Dose: 625 mg/m^2 to 1250 mg/m^2 intravenously over 30 minutes on days 1 and 8 of 21 day cycle (dose range for BSA 1.4 m^2 to 2.1 m^2 = 940 mg to 2630 mg)	**Orthographic similarities** - Both names share letters that appear similar when scripted **Overlapping product characteristics** - Oncology products - Route of Administration: intravenous infusion	**Orthographic differences** - Gemzar contains an additional letter 'r' at the end. - Cyramza contains the downstroke letter 'y'. **Product Characteristic Differences** - Dose: 625 mg/m^2 to 1250 mg/m^2 vs. 5 mg/kg, 6 mg/kg, or 8 mg/kg
5.	(b) (4)		-

*** This document contains proprietary and confidential information that should not be released to the public.***

No.	**Proposed name: Cyramza (Ramucirumab)** **Dosage Form: Injection** **Strengths: 100 mg/10 mL and 500 mg/50 mL** **Usual Dose: 5 mg/kg, 6 mg/kg, or 8 mg/kg via intravenous infusion every 2 weeks (dose range 50 kg to 115 kg = 250 mg to 920 mg)**	**Failure Mode: Incorrect Product Ordered/ Selected/Dispensed or Administered because of Name confusion** **Causes (could be multiple)**	**Prevention of Failure Mode** **In the conditions outlined below, the following combination of factors, are expected to minimize the risk of confusion between these two names**
6.	Xyrem (Sodium Oxybate) 500 mg/mL oral solution Usual Dose: 2.25 g to 6 g (4.5 mL to 12 mL) orally twice daily	**Phonetic similarities** - Both names share similarly sounding syllables ('Xy-rem' vs. 'Cy-ram-') **Overlapping product characteristics** - Overlapping strength: 500 mg	**Phonetic differences** - Cyramza contains a third syllable ('-za') **Product Characteristic Differences** - Dose: 2.25 g to 6 g (4.5 mL to 12 mL) vs. 5 mg/kg, 6 mg/kg, or 8 mg/kg It is unlikely that an intravenous oncologic agent will be prescribed verbally.

Appendix F: Names previously reviewed in OSE Review 2012-2274 not likely to be confused or not used in usual practice settings for the reasons described.

Proprietary Name	Active Ingredient	Similarity to Cyramza	Failure preventions
Cyclafem	Ethinyl Estradiol/ Norethindrone	Looks alike	The pair has sufficient orthographic differences
Cymbalta	Duloxetine	Looks alike	The pair has sufficient orthographic differences
Cystadane	Betaine	Looks alike	The pair has sufficient orthographic differences
Cytogam	Cytomegalovirus Immune Globulin	Looks alike	The pair has sufficient orthographic differences
Cytotec	Misoprostol	Looks alike	The pair has sufficient orthographic differences
Cyramza***	Ramucirumab	Looks and sounds alike	Name that is the subject of this review
Simbrinza***	Brinzolamide/ Brimonidine	Sounds alike	The pair has sufficient phonetic differences
(b) (4) ***		Looks and sounds alike	Name identified in Saegis database. Unable to find product characteristics in commonly used drug databases.
(b) (4) ***		Looks and sounds alike	Name identified in Saegis database. Unable to find product characteristics in commonly used drug databases.
(b) (4) ***		Looks and sounds alike	Name identified in Saegis database. Unable to find product characteristics in commonly used drug databases.
(b) (4) ***		Looks and sounds alike	Name identified in Saegis database. Unable to find product characteristics in commonly used drug databases.
(b) (4) ***		Looks alike	Name identified in Saegis database. Unable to find product characteristics in commonly used drug databases.
(b) (4) ***		Looks alike	Name identified in Saegis database. Unable to find product characteristics in commonly used drug databases.
Lyxumia***	Lixisenatide	Looks alike	Proposed Proprietary Name found unacceptable by DMEPA (OSE# 2011-4264). (b) (4)
Lyrizine	Ephedrine/ Hydroxyzine/ Theophylline	Looks alike	Name identified in Red Book and Dogpile. Unable to find product characteristics in other commonly used drug databases.
Cyvaso	Cyclandelate	Looks alike	Name identified in Micromedex.Unable to find product characteristics in other commonly used drug databases.
Virenza	Zanamivir	Sounds alike	Drug name for Zanamivir in India found in Dogpile.
Cytoxan	Cyclophosphamide	Looks alike	The pair has sufficient orthographic differences

*** This document contains proprietary and confidential information that should not be released to the public.

Appendix G: Names previously reviewed in OSE Review 2012-2274 as determined to have risk of errors due to product confusion minimized by dissimilarity of the names and/ or use in clinical practice for the reasons described

Proposed name: Cyramza (Ramucirumab) **Dosage Form: Injection** **Strength: 100 mg/10 mL and 500 mg/50 mL** **Usual Dose: 5 mg/kg, 6 mg/kg, or 8 mg/kg via intravenous infusion every 2 weeks (dose range 50 kg to 115 kg = 250 mg to 920 mg)**	**Failure Mode: Incorrect Product Ordered/ Selected/Dispensed or Administered because of Name confusion** **Causes (could be multiple)**	**Prevention of Failure Mode** **In the conditions outlined below, the following combination of factors, are expected to minimize the risk of confusion between these two names**
Apriso (Mesalamine) Extended Release Oral Capsule 0.375 gm Usual Dose: 1.5 grams orally once daily	Orthographic: The letter string 'Cyr' can look similar to the letter string 'Apr' when scripted. Numerically Similar Dose or Strength: Apriso 0.375 gm vs. Cyramza 375 mg	Orthographic: The letter string 'amza' does not look similar to the letter string 'iso' when scripted. Frequency of Administration: Every two weeks vs. once daily
Azasan (Azathioprine) Tablets 75 mg and 100 mg Usual Dose: 1 mg/kg to 5 mg/kg (50 mg to 500 mg) orally once daily	Orthographic: The letter string 'Cy' can look similar to the letter string 'Az' when scripted, especially if the letter 'z' is scripted with a down stroke. Dose: There can be an overlap in dose- 250 mg to 920 mg based on weight vs. 50 mg to 500 mg.	Orthographic: The letter string 'ramza' does not look similar to the letter string 'asan' when scripted. Strength: Azasan has multiple strengths that would need to be indicated on the prescription. Frequency of Administration: Every two weeks vs. once daily

Proposed name: Cyramza (Ramucirumab) **Dosage Form: Injection** **Strength: 100 mg/10 mL and 500 mg/50 mL** **Usual Dose: 5 mg/kg, 6 mg/kg, or 8 mg/kg via intravenous infusion every 2 weeks (dose range 50 kg to 115 kg = 250 mg to 920 mg)**	**Failure Mode: Incorrect Product Ordered/ Selected/Dispensed or Administered because of Name confusion** **Causes (could be multiple)**	**Prevention of Failure Mode** **In the conditions outlined below, the following combination of factors, are expected to minimize the risk of confusion between these two names**
Cyclessa (Desogestrel/ Ethinyl Estradiol) Tablets 0.150 mg/0.025 mg Usual Dose: Take one tablet orally once daily	Orthographic: The letter string 'Cyr' can look similar to the letter string 'Cyc' when scripted. The letter string 'za' can look similar to the letter string 'sa' when scripted. Strength: Each product contains one strength and may be omitted.	Orthographic: The letter string 'am' does not look similar to the letter string 'les' when scripted. Dose: There is no overlap or numerical similarity Frequency of Administration: Every two weeks vs. once daily


(b) (4)

Proposed name: Cyramza (Ramucirumab) **Dosage Form: Injection** **Strength: 100 mg/10 mL and 500 mg/50 mL** **Usual Dose: 5 mg/kg, 6 mg/kg, or 8 mg/kg via intravenous infusion every 2 weeks (dose range 50 kg to 115 kg = 250 mg to 920 mg)**	**Failure Mode: Incorrect Product Ordered/ Selected/Dispensed or Administered because of Name confusion** **Causes (could be multiple)**	**Prevention of Failure Mode** **In the conditions outlined below, the following combination of factors, are expected to minimize the risk of confusion between these two names**
Cysview (Hexaminolevulinate) Powder for Injection 100 mg (2 mg/mL after reconstitution) Usual Dose: Instill 100 mg intravesically once only	Orthographic: The letter string 'Cyr' can look similar to the letter string 'Cys' when scripted. Frequency of Administration: Both products can be given once only Strength: 100 mg	Orthographic: The letter string 'amza' does not look similar to the letter string 'view' when scripted.
Cytovene (Ganciclovir) Powder for Injection 500 mg Usual Dose: 1.25 mg/kg to 5 mg/kg (75 mg to 600 mg) intravenously every 12 to 24 hours	Orthographic: Both names begin with the letter string 'Cy'. Dose: There can be an overlap in dose- 250 mg to 920 mg based on weight vs. 75 mg to 600 mg based on weight Strength: Each product contains one strength and may be omitted. Route of Administration: Each product is given intravenously	Orthographic: Cytovene has a cross stroke letter 't' in the third position where Cyramza does not. The letter string 'mza' does not look similar to the letter string 'ene' when scripted. Frequency of Administration: Every two weeks vs. every 12 to 24 hours

*** This document contains proprietary and confidential information that should not be released to the public.

Proposed name: Cyramza (Ramucirumab) **Dosage Form: Injection** **Strength: 100 mg/10 mL and 500 mg/50 mL** **Usual Dose: 5 mg/kg, 6 mg/kg, or 8 mg/kg via intravenous infusion every 2 weeks (dose range 50 kg to 115 kg = 250 mg to 920 mg)**	**Failure Mode: Incorrect Product Ordered/ Selected/Dispensed or Administered because of Name confusion** **Causes (could be multiple)**	**Prevention of Failure Mode** **In the conditions outlined below, the following combination of factors, are expected to minimize the risk of confusion between these two names**
Gynazole (Butoconazole) Vaginal Cream 2% Usual Dose: Insert one applicator full of cream vaginally once only	Orthographic: The letter string 'Gyna' can look similar to the letter string 'Cyra' when scripted.	Orthographic: The letter string 'mza' does not look similar to the letter string 'zole' when scripted. Dose: One applicator full vs. 250 mg to 920 mg based on weight. Frequency of Administration: Every 2 weeks vs. once only
Gynogen LA (Estradiol) Oil for Injection 20 mg/mL Usual Dose: 10 mg to 20 mg intramuscularly every 4 weeks	Orthographic: The letter string 'Gyno' can look similar to the letter string 'Cyra' when scripted. Both names have a down stroke letter near the end of the name. .	Orthographic: The name Cyramza has a letter 'm' between the letter 'a' and the downstroke letter 'z'. Gynogen LA does not have a letter 'm' between the letter 'o' and the downstroke letter 'g'. When included, the modifier 'LA' provides orthographic difference. Dose: There is no overlap or numerical similarity Frequency of Administration: Every 2 weeks vs. every 4 weeks

Proposed name: Cyramza (Ramucirumab) **Dosage Form: Injection** **Strength: 100 mg/10 mL and 500 mg/50 mL** **Usual Dose: 5 mg/kg, 6 mg/kg, or 8 mg/kg via intravenous infusion every 2 weeks (dose range 50 kg to 115 kg = 250 mg to 920 mg)**	**Failure Mode: Incorrect Product Ordered/ Selected/Dispensed or Administered because of Name confusion** **Causes (could be multiple)**	**Prevention of Failure Mode** **In the conditions outlined below, the following combination of factors, are expected to minimize the risk of confusion between these two names**
Lyrica (Pregabalin) Capsules and Oral Solution Capsule: 25 mg, 50 mg, 75 mg, 100 mg, 150 mg, 200 mg, 225 mg, 300 mg Oral Solution: 20 mg/mL Usual Dose: 50 mg to 200 mg orally three times daily	Orthographic: The letter string 'Cyr' can look similar to the letter string 'Lyr' when scripted. The letter string 'za' can look similar to the letter string 'ca' when scripted. Dose overlap: 300 mg	Orthographic: The letter string 'am' does not look similar to the letter 'i' when scripted. Frequency of Administration: Every two weeks vs. three times daily Medication orders for Cyramza are likely to contain the duration of infusion.
Lysinyl (L-Lysine) Capsule and Oral Powder Capsule: 500 mg Oral Powder: 150 grams Usual Dose: 500 mg to 3,000 mg orally once daily	Orthographic: The letter string 'Cyr' can look similar to the letter string 'Lys' when scripted. Both names have a downstroke letter near the end of the name. Overlapping Dose: 500 mg, 650 mg, 800 mg	Orthographic: The letter string 'am' does not look similar to the letter string 'in' when scripted. The name Lysinyl contains an upstroke letter 'l' at the end of the name where Cyramza does not. Frequency of Administration: Every 2 weeks vs. once daily

Proposed name: Cyramza (Ramucirumab) **Dosage Form: Injection** **Strength: 100 mg/10 mL and 500 mg/50 mL** **Usual Dose: 5 mg/kg, 6 mg/kg, or 8 mg/kg via intravenous infusion every 2 weeks (dose range 50 kg to 115 kg = 250 mg to 920 mg)**	**Failure Mode: Incorrect Product Ordered/ Selected/Dispensed or Administered because of Name confusion** **Causes (could be multiple)**	**Prevention of Failure Mode** **In the conditions outlined below, the following combination of factors, are expected to minimize the risk of confusion between these two names**
Zolinza (Vorinostat) Capsules 100 mg Usual Dose: 400 mg orally once daily	Orthographic: The letter 'c' can look similar to the letter 'z' when scripted in lower case. The letter string 'mza' can look similar to the letter string 'nza' when scripted. Overlapping Dose: 400 mg Setting of use: Each product is used in the oncology setting	Orthographic: The letter string 'yra' does not look similar to the letter string 'oli' when scripted. Frequency of Administration: Every 2 weeks vs. once daily
Ampyra (Dalfampridine) Extended Release Tablets 10 mg Usual Dose: 10 mg orally twice daily	Orthographic: The letter 'C' can look similar to the letter string 'A' when scripted. The letter string 'za' can look similar to the letter string 'yra' when scripted. Strength: Each product contains one strength and may be omitted.	Orthographic: The letter string 'yra' in Cyramza does not look similar to the letter string 'mpy' in Ampyra when scripted. Dose: There is no overlap or numerical similarity Frequency of Administration: Every 2 weeks vs. twice daily
Cystaran (Cysteamine) Powder 100 gram Usual Dose: 50 mg to 600 mg orally four times daily	Orthographic: The letter string 'Cyr' can look similar to the letter string 'Cys' when scripted. Overlapping Dose: 250 mg to 600 mg	Orthographic: The letter string 'amza' does not look similar to the letter string 'taran' when scripted. Frequency of Administration: Every 2 weeks vs. four times daily

Proposed name: Cyramza (Ramucirumab) **Dosage Form: Injection** **Strength: 100 mg/10 mL and 500 mg/50 mL** **Usual Dose: 5 mg/kg, 6 mg/kg, or 8 mg/kg via intravenous infusion every 2 weeks (dose range 50 kg to 115 kg = 250 mg to 920 mg)**	**Failure Mode: Incorrect Product Ordered/ Selected/Dispensed or Administered because of Name confusion** **Causes (could be multiple)**	**Prevention of Failure Mode** **In the conditions outlined below, the following combination of factors, are expected to minimize the risk of confusion between these two names**
Cystagon (Cysteamine) Capsules 50 mg and 150 mg Usual Dose: 50 mg to 600 mg orally four times daily	Orthographic: The letter string 'Cyr' can look similar to the letter string 'Cys' when scripted. Overlapping Dose: 250 mg to 600 mg	Orthographic: The letter string 'amza' does not look similar to the letter string 'tagon' when scripted. Strength: Cystagon has multiple strengths that would need to be indicated on the prescription. There is no overlap or numerical similarity between strengths Frequency of Administration: Every 2 weeks vs. four times daily
Stivarga (Regorafenib) Tablets 40 mg Usual Dose: 80 mg to 160 mg orally once daily	Orthographic: The letter string 'amza' can look similar to the letter string 'arga' when scripted. Strength: Each product contains one strength and may be omitted. Setting of Use: Each product is used in the oncology setting Numerically Similar Dose: 80 mg vs. 800 mg	Orthographic: The letter string 'Cyr' does not look similar to the letter string 'Stiv' when scripted. Frequency of Administration: Every 2 weeks vs. once daily

Proposed name: Cyramza (Ramucirumab) **Dosage Form: Injection** **Strength: 100 mg/10 mL and 500 mg/50 mL** **Usual Dose: 5 mg/kg, 6 mg/kg, or 8 mg/kg via intravenous infusion every 2 weeks (dose range 50 kg to 115 kg = 250 mg to 920 mg)**	**Failure Mode: Incorrect Product Ordered/ Selected/Dispensed or Administered because of Name confusion** **Causes (could be multiple)**	**Prevention of Failure Mode** **In the conditions outlined below, the following combination of factors, are expected to minimize the risk of confusion between these two names**
Caprelsa (Vandetanib) Tablets 100 mg and 300 mg Usual Dose: 100 mg to 300 mg orally once daily	Orthographic: The letter string 'Cyr' can look similar to the letter string 'Capr' when scripted. The letter string 'za' can look similar to the letter string 'sa' when scripted. Overlapping Dose: 300 mg Setting of Use: Each product is used in the oncology setting	Orthographic: The letter string 'am' does not look similar to the letter string 'el' when scripted. Frequency of Administration: Every 2 weeks vs. once daily
Cyronine (Liothyronine) Tablets 25 mcg and 50 mcg Usual Dose: 25 mcg to 50 mcg orally once daily	Orthographic: The letter string 'Cyra' can look similar to the letter string 'Cyro' when scripted. Numerically Similar Dose: 50 mcg vs. 500 mg	Orthographic: The letter string 'mza' does not look similar to the letter string 'nine' when scripted. Strength: Cyronine has multiple strengths that would need to be indicated on the prescription. There is no overlap or numerical similarity between strengths Frequency of Administration: Every 2 weeks vs. once daily

Proposed name: Cyramza (Ramucirumab) **Dosage Form: Injection** **Strength: 100 mg/10 mL and 500 mg/50 mL** **Usual Dose: 5 mg/kg, 6 mg/kg, or 8 mg/kg via intravenous infusion every 2 weeks (dose range 50 kg to 115 kg = 250 mg to 920 mg)**	**Failure Mode: Incorrect Product Ordered/ Selected/Dispensed or Administered because of Name confusion** **Causes (could be multiple)**	**Prevention of Failure Mode** **In the conditions outlined below, the following combination of factors, are expected to minimize the risk of confusion between these two names**
Cerezyme (Imiglucerase) Powder for Injection 200 units, 400 units Usual Dose: 50 units to 250 units intravenously three times weekly or 1,200 units to 4,000 units intravenously every two weeks	Orthographic: Both names begin with the letter 'C'. Both names contain a downstroke letter near the end of the name. Overlapping Dose: 250 units vs. 250 mg Frequency of Administration: Each product can be given every 2 weeks Route of Administration: Both products are given intravenously	Orthographic: The letter string 'yram' does not look similar to the letter string 'erez' when scripted. Strength: Cerezyme has multiple strengths that would need to be indicated on the prescription. There is no overlap or numerical similarity between strengths

Proposed name: Cyramza (Ramucirumab) **Dosage Form: Injection** **Strength: 100 mg/10 mL and 500 mg/50 mL** **Usual Dose: 5 mg/kg, 6 mg/kg, or 8 mg/kg via intravenous infusion every 2 weeks (dose range 50 kg to 115 kg = 250 mg to 920 mg)**	**Failure Mode: Incorrect Product Ordered/ Selected/Dispensed or Administered because of Name confusion** **Causes (could be multiple)**	**Prevention of Failure Mode** **In the conditions outlined below, the following combination of factors, are expected to minimize the risk of confusion between these two names**
Cimzia (Certolizumab) Powder for Injection and prefilled syringe 200 mg vial 200 mg/mL prefilled syringe Usual Dose: 400 mg subcutaneously every other week for 3 doses then 400 mg every 4 weeks	Orthographic: Both names begin with the letter 'C'. The letter string 'za' can look similar to the letter string 'zia' when scripted. Phonetic: Both names begin with the letter 'C'. The letter string 'za' is phonetically similar to the letter string 'zia'. Overlapping Dose: 400 mg Frequency of Administration: Every 2 weeks	Orthographic: The letter string 'yram' does not look similar to the letter string 'im' when scripted. Phonetic: The name Cyramza has the syllable 'ram' to provide phonetic differences between the names. Medication orders for Cyramza are likely to contain the duration of infusion.
Cinryze (C1 Esterase Inhibitor) Powder for Injection 500 units per vial Usual Dose: 1,000 units intravenously every 3 to 4 days	Orthographic: Both names begin with the letter 'C' when scripted. The letter string 'za' can look similar to the letter string 'ze' when scripted. Phonetic: The letter string 'Cy' can sound similar to the letter string 'Ci'. The letter string 'za' can sound similar to the letter string 'ze'. Strength: Each product contains one strength and may be omitted.	Orthographic: The letter string 'yram' does not look similar to the letter string 'inry' when scripted. Phonetic: Cyramza has three syllables where Cinryze has only two syllables. The letter string 'nry' does not sound similar to the letter string 'ram'. Dose: There is no overlap or numerical similarity Frequency of Administration: Every 2 weeks vs. every 3 to 4 days.

Proposed name: Cyramza (Ramucirumab) **Dosage Form: Injection** **Strength: 100 mg/10 mL and 500 mg/50 mL** **Usual Dose: 5 mg/kg, 6 mg/kg, or 8 mg/kg via intravenous infusion every 2 weeks (dose range 50 kg to 115 kg = 250 mg to 920 mg)**	**Failure Mode: Incorrect Product Ordered/ Selected/Dispensed or Administered because of Name confusion** **Causes (could be multiple)**	**Prevention of Failure Mode** **In the conditions outlined below, the following combination of factors, are expected to minimize the risk of confusion between these two names**
Suprenza (Phentermine) Orally Disintegrating Tablets 15 mg, 30 mg, 37.5 mg Usual Dose: 1 tablet once daily	Phonetic: The letter 'S' in Suprenza sounds similar to the letter 'C' in Cyramza. The letter string 'renza' sounds similar to the letter string 'ramza'. Numerically similar dose: 375 mg vs. 37.5 mg	Phonetic: The letter string 'up' does not sound similar to the letter 'y' in Cyramza when spoken. Strength: Suprenza has multiple strengths that would need to be indicated on the prescription. There is no overlap or numerical similarity between strengths Frequency of Administration: Every 2 weeks vs. once daily

---

This is a representation of an electronic record that was signed electronically and this page is the manifestation of the electronic signature.

/s/

JIBRIL ABDUS-SAMAD
10/25/2013

TODD D BRIDGES
10/25/2013