CENTER FOR DRUG EVALUATION AND RESEARCH

APPLICATION NUMBER:

201739Orig1s000

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:	July 31, 2012
Reviewer(s):	Lissa Owens, PharmD Division of Medication Error Prevention and Analysis
Team Leader	Lubna Merchant, M.S. PharmD Division of Medication Error Prevention and Analysis
Deputy Director	Kellie Taylor PharmD, MPH Division of Medication Error Prevention and Analysis
Drug Name(s) and Strength(s):	Auvi-Q (Epinephrine Injection, USP) 0.3 mg/0.3 mL and 0.15 mg/0.15 mL
Application Type/Number:	NDA 201739
Applicant/Sponsor:	Intellijject, Inc.
OSE RCM #:	2012-1526

*** 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, Auvi-Q, 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

The proprietary name, e-cue was previously reviewed and found conditionally acceptable in OSE Review #2011-1378, on July 20, 2011 for NDA 201739. The Applicant was granted a tentative approval based on a pending patent infringement lawsuit against the Applicant at the time. The lawsuit was dismissed and the Applicant is now seeking final approval of the product.

The name, e-cue was re-submitted on May 18, 2012 and found unacceptable due to the overlapping phonetic similarity with the currently marketed product 'PreQue 10.' A teleconference was held on June 29, 2012 to inform the Applicant of our concerns and 'e-cue' was withdrawn. Subsequently, the Applicant submitted the name Auvi-Q for our evaluation.

1.2 PRODUCT INFORMATION

The following product information is provided in the July 3, 2012 proprietary name submission.

- Active Ingredient: Epinephrine
- Indication of Use: Emergency treatment of allergic reactions (Type I) including anaphylaxis to stinging insects (e.g., order Hymenoptera, which include bees, wasps, hornets, yellow jackets and fire ants) and biting insects (e.g., triatoma, mosquitoes), allergen immunotherapy, foods, vaccines, drugs (e.g., penicillin, omalizumab), diagnostic testing substances (e.g., radiocontrast media) and other allergens, as well as idiopathic anaphylaxis or exercise-induced anaphylaxis
- Route of Administration: Intramuscularly and subcutaneously
- Dosage Form: Injection Solution in a pre-filled auto-injector
- Strength: 0.3 mg/0.3 mL and 0.15 mg/0.15 mL
- Dose and Frequency: 0.3 mg in patients greater than 30 kg at the onset of allergic reaction; 0.15 mg in patients 15 kg to 30 kg at the onset of allergic reaction
- How Supplied: Carton containing two auto-injectors and a single trainer device
- Storage: 25°C (77°F); excursions permitted to 15°C-30°C (59°F-86°F); protect from light

2. RESULTS

The following sections provide the information obtained and considered in the 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 Pulmonary, Allergy, and Rheumatology Products concurred with the findings of OPDP's promotional assessment of the proposed name.

2.2 SAFETY ASSESSMENT

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

2.2.1 United States Adopted Names (USAN) SEARCH

The July 27, 2012 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 in the proposed name, Auvi-Q was crafted to reflect the audio-visual cues provided as a feature of EAI to support correct use of the product.

2.2.4 FDA Name Simulation Studies

Twenty-Seven practitioners participated in DMEPA's prescription studies. The interpretations did not overlap with or appear or sound similar to any currently marketed products. None of the participants interpreted the name correctly as 'Auvi-Q' Two participants (inpatient n=2) interpreted the name as Auvi Q without the hyphen. See Appendix C for the complete listing of interpretations from the verbal and written prescription studies.

2.2.5 Comments from Other Review Disciplines

In response to the OSE, July 5, 2012 e-mail, the Division of Pulmonary, Allergy, and Rheumatology Products (DPARP) did not forward any comments or concerns relating to the proposed name at the initial phase of the proprietary name 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, Auvi-Q. We also reviewed the name as "Auviq". Table 1 lists the names with orthographic, phonetic, or spelling similarity to the proposed proprietary name, Auvi-Q identified by the primary reviewer, the Expert Panel Discussion (EPD), and other review disciplines.

Table 1: Collective List of Potentially Similar Names (DMEPA, EPD, and Other Disciplines)

Look Similar					
Name	***Source***	***Name***	***Source***	***Name***	***Source***
Aurax	FDA	Flora-Q	FDA	Aezea	FDA
Ovace	FDA	Amrix	FDA	Arava	FDA
Avage	FDA	Avinza	FDA	Aviane	FDA
Clenia	FDA	Actiq	FDA	Ovide	FDA
Mavik	FDA	Luxiq	FDA	Avar	FDA
Eurax	FDA	(b) (4)***	FDA	Cuvposa	FDA
Avagard D	FDA	Aubagio***	FDA	(b) (4)***	FDA
Oravig	FDA	Alinia	FDA	Olux	FDA
Aloxi	FDA	Anurx-HC	FDA	Avita	FDA
Look and Sound Similar					
Auvi-Q	FDA				

Our analysis of the twenty-eight names contained in Table 1 considered the information obtained in the previous sections along with their product characteristics. We determined that none of the names will pose a risk for confusion as described in Appendix D through E.

2.2.7 Communication of DMEPA's Final Decision to Other Disciplines

DMEPA communicated our findings to the Division of Pulmonary, Allergy, and Rheumatology Products via e-mail. At that time we also requested additional information or concerns that could inform our review. Per e-mail correspondence from the Division of Pulmonary, Allergy, and Rheumatology Products, they stated no additional concerns with the proposed proprietary name, Auvi-Q.

3 CONCLUSIONS

The proposed proprietary name, Auvi-Q is acceptable from both a promotional and safety perspective.

If you have further questions or need clarifications, please contact Nichelle Rashid, OSE project manager, at 301-796-3904

3.1 COMMENTS TO THE APPLICANT

We have completed our review of the proposed proprietary name, Auvi-Q, and have concluded that this name is acceptable. However, if any of the proposed product characteristics as stated in your July 3, 2012 submission are altered, DMEPA rescinds this finding and the name must be resubmitted for review.

Additionally, the proposed proprietary name must be re-reviewed 90 days prior to approval of the NDA. The conclusions upon re-review are subject to change.

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. ***Data provided by Thomson & Thomson's SAEGIS ™ Online Service, available at (www.thomson-thomson.com)***

   The Pharma In-Use Search database contains over 400,000 unique pharmaceutical trademarks and trade names that are used in about 50 countries worldwide. The data is provided under license by IMS HEALTH.

10. ***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.

11. ***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.

12. ***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.

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

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

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

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

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

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

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

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

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

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

18. Rx List (www.rxlist.com)

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

19. 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.

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

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

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.

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 with Possible Orthographic or Phonetic Misinterpretation

Letters in Name, Auvi-Q	Scripted May Appear as	Spoken May Be Interpreted as
Capital 'A'	ce, s, FL, H	Any Vowel
lowercase 'u'	n, y, v, w, Any Vowel	Any Vowel
lowercase 'v'	r, u	f
lowercase 'i'	e, l	Any Vowel
Capital 'Q'	O	K

Appendix C: Prescription Simulation Samples and Results

Figure 1. Auvi-Q Study (Conducted on July 6, 2012)

Handwritten Requisition Medication Order	Verbal Prescription
Medication Order: Auvi Q 0.15 mg as directed	Auvi-Q 0.3 mg #1 UAD
Outpatient Prescription: Auvi-Q 0.3mg #1 UAD	

FDA Prescription Simulation Responses (Aggregate 1 Rx Studies Report)

ACUI Q	0	0	1	1
ACUI-Q	0	0	1	1
ALLVIQUE	0	1	0	1
ALVIQUE	0	1	0	1
ALVQ	0	1	0	1
AMMI-Q	0	0	1	1
ANIRQ	1	0	0	1
ARUI	0	0	1	1
ARUI Q	0	0	1	1
AUIR O	1	0	0	1
AUIRI Q	1	0	0	1
AUNI-Q	0	0	1	1
AURI O	1	0	0	1
AUUI-Q	0	0	1	1
AUVI Q	2	0	0	2
AUVRI Q	1	0	0	1
AUXID	1	0	0	1
AVI Q	0	1	0	1
AVICUE	0	1	0	1
AVIQ	0	1	0	1
AVUI	0	0	1	1
AVVI Q	1	0	0	1
OVEQUE	0	1	0	1
OVIQ	0	1	0	1
OVI-Q	0	1	0	1
OVIQUEUE	0	1	0	1

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

Proprietary Name	Active Ingredient	Similarity to Auvi-Q	Failure preventions
Cuvposa	Glycopyrrolate	Look	The pair have sufficient orthographic differences
Aubagio***	Teriflunomide	Look	The pair have sufficient orthographic differences and the name was withdrawn on June 8, 2012. No new name has been submitted.
Auvi-Q	Epinephrine	Look and Sound	Name is the subject of this review
Mavik	Trandolapril	Look	The pair have sufficient orthographic differences
Eurax	Crotamiton	Look	The pair have sufficient orthographic differences
Aezea	Cenersen	Look	IND 078965 withdrawn on November 18, 2011. Name not submitted to Agency for review.
(b) (4) ***	Levonorgestrel and Ethinyl Estradiol	Look	ANDA 091452 name withdrawn due to orthographic similarity to the currently marketed product Clenia. Product approved under the name 'Marlissa'
(b) (4) ***	Dutasteride and Tamsulosin Hydrochloride	Look	Secondary name for NDA 22460. Product approved under the primary name 'Jalyn'.

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.

Proposed name: **Dosage Form(s):** **Auvi-Q** **Strength(s):** **0.15 mg/0.15 mL and 0.3 mg/0.3 mL** **Usual Dose: 0.15 mg in patients 33 lbs to 66 lbs and 0.3 mg in patients 66 lbs and greater**	**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**
Flora Q (Lactobacillus Acidophilus) Capsules, 230 mg Usual Dose: One capsule by mouth daily	Orthographic: The pair have the same ending of 'Q'	Strength: Auvi-Q has multiple strengths must be indicated on the prescription vs. Flora Q which is single strength and may not be written on the prescription. There are no overlapping strengths or numerical similarity. Dose: 0.15 mg or 0.3 mg vs. 1 capsule Frequency: At the onset of an allergic reaction vs. once daily
Aurax (Antipyrine and Benzocaine) Otic Solution, 55 mg/14 mg per mL Usual Dose: Instill 2 to 4 drops into affected ear(s) every 1 to 2 hours as needed for ear pain	Orthographic: The pair have the same beginning letter strings, 'Au' Dose: Both may be written as 'UAD'	Orthographic: The ending letter strings, 'Q' vs. 'x' may look different when scripted as the 'Q' may be written as a capital letter or scripted as a downstroke letter, Aurax has no downstroke letters. Strength: Auvi-Q has multiple strengths must be indicated on the prescription vs. Aurax which is single strength and may not be written on the prescription. There are no overlapping strengths or numerical similarity
Ovace (Sulfacetamide Sodium) Cream, Gel, and Foam, 10% Discontinued but generics available Usual Dose: Apply to affected area(s) one to three times daily	Orthographic: The pair have similar beginning letter strings, 'Au' and 'Ov' Dose: Both may be written as 'UAD'	Orthographic: The ending letter strings, 'Q' vs. 'e' may look different when scripted as the 'Q' may be written as a capital letter or scripted as a downstroke letter, Ovace has no downstroke letters. Strength: Auvi-Q has multiple strengths must be indicated on the prescription vs. Ovace which is single strength and may not be written on the prescription.. There are no overlapping strengths or numerical similarity

Proposed name: **Dosage Form(s): Auvi-Q** **Strength(s): 0.15 mg/0.15 mL and 0.3 mg/0.3 mL** **Usual Dose: 0.15 mg in patients 33 lbs to 66 lbs and 0.3 mg in patients 66 lbs and greater**	**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**
Amrix (Cyclobenzaprine Hydrochloride) Extended-release Capsules, 15 mg Usual Dose: One to two capsules by mouth once daily	Orthographic: The pair have similar beginning letter strings, 'Au' and 'Am' Strength: Numerical similarity with the 0.15 mg and 15 mg strengths	Orthographic: The ending letter strings, 'Q' vs. 'x' may look different when scripted as the 'Q' may be written as a capital letter or scripted as a downstroke letter, Amrix has no downstroke letters. Frequency: At the onset of an allergic reaction vs. once daily
Arava (Leflunomide) Tablets, 10 mg, 20 mg, and 100 mg Usual Dose: 100 mg loading dose once daily by mouth for three days, then 10 mg to 20 mg by mouth once daily	Orthographic: The pair have similar beginning letter strings, 'Au' and 'Ar'	Orthographic: The ending letter strings, 'Q' vs. 'a' may look different when scripted as the 'Q' may be written as a capital letter or scripted as a downstroke letter, Arava has no downstroke letters. Strength: Both products have multiple strengths which must be indicated on the prescription. There are no overlapping strengths or numerical similarity Dose: 0.15 mg or 0.3 mg vs. 1 tablet, 10 mg, 20 mg, or 100 mg Frequency: At the onset of an allergic reaction vs. once daily
Avage (Tazarotene) Cream, 0.1% Usual Dose: Apply a pea size amount to the entire face and eyelids once a day at bedtime	Orthographic: The pair have similar beginning letter strings, 'Au' and 'Av' Dose: Both may be written as 'UAD'	Strength: Auvi-Q has multiple strengths must be indicated on the prescription vs. Avage which is single strength and may not be written on the prescription. There are no overlapping strengths or numerical similarity

Proposed name: **Dosage Form(s): Auvi-Q** **Strength(s): 0.15 mg/0.15 mL and 0.3 mg/0.3 mL** **Usual Dose: 0.15 mg in patients 33 lbs to 66 lbs and 0.3 mg in patients 66 lbs and greater**	**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**
Avinza (Morphine Sulfate) Extended-release capsules, 30 mg, 45 mg, 60 mg, 75 mg, 90 mg, and 120 mg Usual Dose: One capsule by mouth once daily	Orthographic: The pair have the similar beginning letter strings, 'Au' and 'Av'	Dose: 0.15 mg or 0.3 mg vs. 1 capsule Frequency: At the onset of an allergic reaction vs. once daily Strength: Both products have multiple strengths which must be indicated on the prescription. There are no overlapping strengths or numerical similarity
Aviane (Levonorgestrel and Ethinyl Estradiol) Tablets, 0.1 mg/0.02 mg Usual Dose: One tablet by mouth once daily	Orthographic: The pair have the similar beginning letter strings, 'Au' and 'Av'	Orthographic: The ending letter strings, 'Q' vs. 'e' may look different when scripted as the 'Q' may be written as a capital letter or scripted as a downstroke letter, Aviane has no downstroke letters. Strength: Auvi-Q has multiple strengths must be indicated on the prescription vs. Aviane which is single strength and may not be written on the prescription. There are no overlapping strengths or numerical similarity Dose: 0.15 mg or 0.3 mg vs. 1 tablet Frequency: At the onset of an allergic reaction vs. once daily
Clenia (Sulfacetamide Sodium and Sulfur) Foaming Wash and Cream, 10%/5% Usual Dose: Foaming Wash: Wash affected area(s) once or twice a day. Cream: Apply a thin layer to affected area(s) one to three times a day	Orthographic: The pair have similar beginning letter strings, 'Au' and 'Cl' Dose: Both may be written as 'UAD'	Orthographic: The ending letter strings, 'Q' vs. 'a' may look different when scripted as the 'Q' may be written as a capital letter or scripted as a downstroke letter, Clenia has no downstroke letters. Clenia contains an upstroke letter 'l' vs. Auvi-Q which does not giving the pair different shapes. Strength: Auvi-Q has multiple strengths must be indicated on the prescription vs. Clenia which is single strength and may not be written on the prescription. There are no overlapping strengths or numerical similarity

Proposed name: **Dosage Form(s): Auvi-Q** **Strength(s): 0.15 mg/0.15 mL and 0.3 mg/0.3 mL** **Usual Dose: 0.15 mg in patients 33 lbs to 66 lbs and 0.3 mg in patients 66 lbs and greater**	**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**
Actiq (Fentanyl Citrate) Lozenge, 200 mcg, 400 mcg, 600 mcg, 800 mcg, 1200 mcg, and 1600 mcg Usual Dose: One lozenge at the onset of breakthrough pain, may repeat once in 15 minutes and then 4 hours later. Limit to 4 or less lozenges per day once successful dose is found	Orthographic: The pair have similar beginning letter strings, 'Au and 'Ac' and the same ending letter string, 'Q' and 'q'	Strength: Both products have multiple strengths which must be indicated on the prescription. There are no overlapping strengths or numerical similarity Dose: 0.15 mg or 0.3 mg vs. 1 lozenge Frequency: At the onset of an allergic reaction vs. at the onset of breakthrough pain
Ovide (Malathion) Lotion, 0.5% Usual Dose: Apply to dry hair, leave on for 8 to 12 hours and then shampoo and rinse out	Orthographic: The pair have similar beginning letter strings, 'Au and 'Ov' Dose: Both may be written as 'UAD'	Orthographic: The ending letter strings, 'Q' vs. 'e' may look different when scripted as the 'Q' may be written as a capital letter or scripted as a downstroke letter, Ovide has no downstroke letters. Strength: Auvi-Q has multiple strengths must be indicated on the prescription vs. Ovide which is single strength and may not be written on the prescription. There are no overlapping strengths or numerical similarity
Luxiq (Betamethasone Valerate) Foam, 0.12% Usual Dose: Massage into affected area(s) twice daily until foam disappears	Orthographic: The pair have the same ending letter string, 'Q' and 'q' Dose: Both may be written as 'UAD'	Orthographic: The beginning letters, 'A' vs. 'L' may look different when scripted. Strength: Auvi-Q has multiple strengths must be indicated on the prescription vs. Luxiq which is single strength and may not be written on the prescription. There are no overlapping strengths or numerical similarity

Proposed name: **Dosage Form(s): Auvi-Q** **Strength(s): 0.15 mg/0.15 mL and 0.3 mg/0.3 mL** **Usual Dose: 0.15 mg in patients 33 lbs to 66 lbs and 0.3 mg in patients 66 lbs and greater**	**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**
Avar (Sulfacetamide and Sulfur) 10%/5% Topical Cleanser Usual Dose: Apply to affected area(s) 2 to 3 times a day	Orthographic: The pair have similar beginning letter strings, 'Au and 'Av' Dose: Both may be written as 'UAD'	Orthographic: The ending letter strings, 'Q' vs. 'r' may look different when scripted as the 'Q' may be written as a capital letter or scripted as a downstroke letter, Avar has no downstroke letters. Strength: Auvi-Q has multiple strengths must be indicated on the prescription vs. Avar which is single strength and may not be written on the prescription. There are no overlapping strengths or numerical similarity.
Avita (Tretinoin) Cream, 0.025% Usual Dose: Apply to acne skin lesions once a day in the evening	Orthographic: The pair have similar beginning letter strings, 'Au' and 'Av' Dose: Both may be written as 'UAD'	Orthographic: The ending letter strings, 'Q' vs. 'a' may look different when scripted as the 'Q' may be written as a capital letter or scripted as a downstroke letter, Avita has no downstroke letters. Strength: Auvi-Q has multiple strengths must be indicated on the prescription vs. Avita which is single strength and may not be written on the prescription. There are no overlapping strengths or numerical similarity.
Avagard D (Ethyl Alcohol) Lotion, 61% Usual Dose: Apply to clean dry hands as needed	Orthographic: The pair have similar beginning letter strings, 'Au' and 'Av' Dose: Both may be written as 'UAD'	Orthographic: Auvi-Q (5 letters) when scripted appears shorter than Avagard D (8 letters). Strength: Auvi-Q has multiple strengths must be indicated on the prescription vs. Avagard which is single strength and may not be written on the prescription. There are no overlapping strengths or numerical similarity

Proposed name: **Dosage Form(s): Auvi-Q** **Strength(s): 0.15 mg/0.15 mL and 0.3 mg/0.3 mL** **Usual Dose: 0.15 mg in patients 33 lbs to 66 lbs and 0.3 mg in patients 66 lbs and greater**	**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**
Anurx (Pramoxine Hydrochloride and Zinc Oxide) Ointment, 1%/12.5% Discontinued but generics available Usual Dose: Apply externally to affected area up to 5 times daily	Orthographic: The pair have similar beginning letter strings, 'Au' and 'An' Dose: Both may be written as 'UAD'	Orthographic: The ending letter strings, 'Q' vs. 'x' may look different when scripted as the 'Q' may be written as a capital letter or scripted as a downstroke letter, Anurx has no downstroke letters. Strength: Auvi-Q has multiple strengths must be indicated on the prescription vs. Anurx which is single strength and may not be written on the prescription.There are no overlapping strengths or numerical similarity
Oravig (Miconazole) Buccal Tablets, 50 mg Usual Dose: Apply one buccal tablet to the gum region once daily for 14 consecutive days.	Orthographic: The pair have similar beginning letter strings, 'Au' and 'Or'	Strength: Auvi-Q has multiple strengths must be indicated on the prescription vs. Oravig which is single strength and may not be written on the prescription.There are no overlapping strengths or numerical similarity Dose: 0.15 mg or 0.3 mg vs. Apply one buccal tablet Frequency: At the onset of an allergic reaction vs. once daily for 14 days
Alinia (Nitazoxanide) Tablet and Powder for Suspension, 500 mg and 100 mg/5 mL Usual Dose: Tablet: 500 mg by mouth ever 12 hours with food Powder for Suspension: 5 mL or 25 mL by mouth every 12 hours with food	Orthographic: The pair have similar beginning letter strings, 'Au' and 'Al'	Orthographic: The ending letter strings, 'Q' vs. 'a' may look different when scripted as the 'Q' may be written as a capital letter or scripted as a downstroke letter, Alinia has no downstroke letters. Strength: Both products have multiple strengths which must be indicated on the prescription. There are no overlapping strengths or numerical similarity Dose: 0.15 mg or 0.3 mg vs. 500 mg, 5 mL, or 25 mL Frequency: At the onset of an allergic reaction vs. every 12 hours

Proposed name: **Dosage Form(s):** **Auvi-Q** **Strength(s):** **0.15 mg/0.15 mL and 0.3 mg/0.3 mL** **Usual Dose: 0.15 mg in patients 33 lbs to 66 lbs and 0.3 mg in patients 66 lbs and greater**	**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**
Olux (Clobetasol Propionate) Foam, 0.05% Usual Dose: Apply to the affected area(s) twice daily	Orthographic: The pair have similar beginning letter strings, 'Au' and 'Ol' Dose: Both may be written as 'UAD'	Orthographic: The ending letter strings, 'Q' vs. 'x' may look different when scripted as the 'Q' may be written as a capital letter or scripted as a downstroke letter, Olux has no downstroke letters. Strength: Auvi-Q has multiple strengths must be indicated on the prescription vs. Olux which is single strength and may not be written on the prescription.There are no overlapping strengths or numerical similarity.
Aloxi (Palonosetron Hydrochloride) Capsules, 0.5 mg Usual Dose: 0.5 mg by mouth one hour prior to the start of chemotherapy	Orthographic: The pair have similar beginning letter strings, 'Au' and 'Al'	Orthographic: The ending letter strings, 'Q' vs. 'i' may look different when scripted as the 'Q' may be written as a capital letter or scripted as a downstroke letter, Aloxi has no downstroke letters. Strength: Auvi-Q has multiple strengths must be indicated on the prescription vs. Aloxi which is single strength and may not be written on the prescription.There are no overlapping strengths or numerical similarity Dose: 0.15 mg or 0.3 mg vs. 0.5 mg Frequency: At the onset of an allergic reaction vs. one hour prior to the start of chemotherapy

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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.

/s/

LUBNA A MERCHANT on behalf of LISSA C OWENS
07/31/2012

LUBNA A MERCHANT
07/31/2012

KELLIE A TAYLOR
07/31/2012

MEMORANDUM

DEPARTMENT OF HEALTH AND HUMAN SERVICES
PUBLIC HEALTH SERVICE
FOOD AND DRUG ADMINISTRATION
CENTER FOR DRUG EVALUATION AND RESEARCH

Type of Meeting: Proprietary Name Review

Meeting Date: July 2, 2012; 2:30PM
Meeting Location: White Oak Building 22, Room 4440

Application: NDA 201739
Proposed Proprietary Name: ecue
Established Name: epinephrine
Applicant: Intellijject, Inc.

Meeting Chair: Lubna Merchant, Team Leader, DMEPA
Meeting Recorder: Nichelle Rashid, Safety Regulatory Project Manager

FDA Attendees:

Office of Surveillance and Epidemiology
Lubna Merchant, Team Leader, DMEPA
Nichelle Rashid, Safety Regulatory Health Project Manager
Teena Thomas, Safety Regulatory Health Project Manager

Applicant Attendees:

Intellijject, Inc.

- Spencer Williamson, CEO, Intellijject, Inc.
- Neil Hughes, Chief Commercial Officer, Intellijject, Inc.
- Ronald D. Gunn, V.P. Drug Development and Regulatory Affairs, Intellijject, Inc.
- Evan Edwards, V.P., Product Development, Intellijject, Inc.
- Margaret Kautz, RRD International

Background:

DMEPA completed review of the proposed proprietary name ecue under NDA 201739, (OSE RCM #2011-1378 dated); and found the name conditionally acceptable at that time. Per FDA Guidance for Industry, the proposed proprietary name, ecue, was re-submitted for review under the NDA 201739 on May 18, 2012, and found unacceptable for marketing (OSE RCM 2012-1187) due to strong phonetic similarity to the currently marketed prescription prenatal vitamin 'PreQue 10'. DMEPA requested a teleconference with the sponsor to provide them with options so that the name, Ecue could be viable on June 29, 2012. The sponsor requested a teleconference to provide clarification to the questions and responses for the submitted questions.

Meeting Objectives

The objective of this meeting is to provide clarification to the questions and responses for the submitted questions.

Discussions:

This call is a continuation of the call on 29 June 2012 to discuss the proprietary name, and to provide clarification to the questions and responses for the submitted questions.

The questions that Intelliject submitted in the e-mail on 02 July 2012 are noted in italic font and FDA's responses are noted in bold text.

Intelliject Question:
1) If Intelliject decides to pursue an alternative proprietary name, how long will it take FDA to inform us which of the following possible proprietary names is acceptable:

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AUVI-Q
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FDA Response:
We can perform the promotional and preliminary safety assessment of these names in about 2 weeks, however a complete safety assessment will require a little more time. Although not our normal practice, we are willing to make a exception and conduct a safety assessment of more than one name at a time. We will try our best to identify a viable name by the Application PDUFA date.

Intelliject Question:
2) What can Intelliject do to help facilitate the review of these names as quickly as possible?

FDA Response:

Submit the proprietary name request as soon as possible. Please include all your options for the name and the order of preference:
Primary name
first alternate
second alternate and so on

DMEPA discussed the PDUFA dates for the proprietary name - August 18, 2012 and for the resubmission - November 2, 2012. .

The sponsor clarified on the timeframe regarding the full assessment of a proprietary name if the preliminary assessment is done in two weeks.

DMEPA responded that a preliminary assessment is performed initially to identify if there are products with those names already in existence and if any products have a USAN stem. During this time, DMEPA can identify which names will immediately not be acceptable. This preliminary assessment can be completed in two weeks. For the full assessment, each name has to go through a simulation study and DMEPA needs the results from those studies before a decision can be reached. There are some rate-limiting steps in the process.

The sponsor asked when the full assessment would be complete.

DMEPA replied that an exact date depends on the workload of the team reviewing the name. If the new proprietary name is submitted in the next couple of days, then there is a moderate possibility that a decision would be reached in 5-6 weeks, but certainly by 3 months, a name would be approved. The application could still be reviewed without the proprietary name. For that to happen, Intelliject would need to resubmit their labeling with the established name. Upon approval of the proprietary name Intelliject would need to submit a supplement containing the labeling with the approved proprietary name. It was stated that not having a proprietary name will not hold up an NDA approval.

The sponsor stated that the objective of trying to determine the timing for the review of the proprietary name is that all of the marketing products have been created with e-cue. Further, they will need to be revised with the new proprietary name. If the new proprietary name is submitted in the next couple of days, then there is a moderate possibility that a decision would be reached in 5-6 weeks, but certainly, by 3 months, their name will be evaluated.

DMEPA responded YES.

The sponsor asked if Intelliject were to submit a new proprietary name for approval and in two weeks, approval of the product is granted, would the review of the proprietary names continue.

DMEPA stated that review of the proprietary name is independent of the NDA review clock. If the product were approved without the approval of the proprietary name, Intelliject would need to submit a prior approval supplement containing the labeling with the approved proprietary name.

The sponsor asked if there is anything that Intellject can do to help the review process. They also asked if the preliminary assessment that the Agency will perform will impede the review process.

DMEPA stated that the preliminary assessment will help to eliminate names that are initially not acceptable. The full safety assessment will require more time, DMEPA can notify Intelliject quickly by e-mail or teleconference if the first name submitted is rejected and if they are moving on to the second name, so that Intelliject can formally submit a request for the second name. DMEPA encouraged Intelliject to submit a second and third option, as stated previously. DMEPA will notify Intelliject of their progress if one of these names is not acceptable.

The sponsor clarified that the current order of preference for the Proprietary Names is not correct for the order of names contained in the e-mail submitted on 02 July 2012 and indicated that Intelliject will be very clear on the order of names they are submitting for review.

DMEPA stated that if any safety studies on any of the proposed names have been performed to please submit those with the Request for the Proprietary Name as this will assist in the review.

DMEPA summarized that the product characteristics in the request for the proprietary name will be required and that Intelliject can reference the e-cue labeling that is currently in NDA 201739 when they submit a new Request for Proprietary Name.

The sponsor stated that it is Intelliject's understanding that PreQue 10 is an unapproved drug that was introduced in November 2011. Additionally, FDA issued a compliance policy guidance on 19 September 2011 which states that any unapproved drug introduced into the market after 19 September 2011 is subject to immediate enforcement action. He questioned if this policy has any impact on the issue with e-cue because according to FDA policy, PreQue-10 is not supposed to be on the market.

DMEPA responded they would have to get back to Intelliject regarding this.

The sponsor questioned if the trade name of PreQue10 were cancelled by the United States patent Office, and notice of cancellation was published, would that be sufficient to relinquish any safety concerns?

DMEPA stated that if PreQue10 is available in the market as a prescription or an over the counter (OTC) product, there is still a chance for confusion and a safety concern.

The sponsor asked if they was able to remove the product by a certain date and provide documentation of that agreement with Watson Pharmaceuticals, would that be sufficient documentation to alleviate the issue with e-cue.

DMEPA responded YES.

DMEPA stated that if Intelljject does submit a new proprietary name, the proprietary name of e-cue needs to be withdrawn. DMEPA added that if Intellijject was able to stop PreQue10 from being on the market, they could resubmit the name e-cue again.

The sponsor does plan to submit a request for a proprietary name.

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

/s/

NICHELLE E RASHID
08/10/2012

MEMORANDUM

DEPARTMENT OF HEALTH AND HUMAN SERVICES
PUBLIC HEALTH SERVICE
FOOD AND DRUG ADMINISTRATION
CENTER FOR DRUG EVALUATION AND RESEARCH

Type of Meeting: Proprietary Name Review

Meeting Date: June 29, 2012; 2:30PM
Meeting Location: Teleconference

Application: NDA 201739
Proposed Proprietary Name: ecue
Established Name: epinephrine
Applicant: Intellijject, Inc.

Meeting Chair: Lubna Merchant, Team Leader, DMEPA
Meeting Recorder: Nichelle Rashid, Safety Regulatory Project Manager

FDA Attendees:

Office of Surveillance and Epidemiology
Carol Holquist, Division Director, DMEPA
Kellie Taylor, Deputy Director, DMEPA
Lubna Merchant, Team Leader, DMEPA
Lissa Owens, Safety Evaluator, DMEPA
Nichelle Rashid, Safety Regulatory Health Project Manager
Teena Thomas, Safety Regulatory Health Project Manager

Applicant Attendees:

Intellijject, Inc.

- Spencer Williamson, CEO, Intellijject, Inc.
- Neil Hughes, Chief Commercial Officer, Intellijject, Inc.
- Ronald D. Gunn, V.P. Drug Development and Regulatory Affairs, Intellijject, Inc.
- Evan Edwards, V.P., Product Development, Intellijject, Inc.
- (b) (4)

Background:

DMEPA completed review of the proposed proprietary name ecue under NDA 201739, (OSE RCM #2011-1378 dated); and found the name conditionally acceptable at that time. Per FDA Guidance for Industry, the proposed proprietary name, ecue, was re-submitted for review under the NDA 201739 on May 18, 2012, and found unacceptable for marketing due to strong phonetic similarity to the currently marketed prescription prenatal vitamin 'PreQue 10'. DMEPA requested a teleconference with the sponsor to provide them with options so that the name, Ecue could be viable.

Product Information:

e-cue (Epinephrine Injection, USP) autoinjector is indicated for Emergency treatment of allergic reactions (Type I) including anaphylaxis to stinging insects (e.g., order Hymenoptera, which include bees, wasps, hornets, yellow jackets and fire ants) and biting insects (e.g., triatoma, mosquitoes), allergen immunotherapy, foods, vaccines, drugs (e.g., penicillin, omalizumab), diagnostic testing substances (e.g., radiocontrast media) and other allergens, as well as idiopathic anaphylaxis or exercise-induced anaphylaxis. The recommended dose is 0.3 mg in patients greater than 30 kg at the onset of allergic reaction; 0.15 mg in patients 15 kg to 30 kg at the onset of allergic reaction. It will be available in 0.3 mg/0.3 mL and 0.15 mg/0.15 mL.

PreQue 10 is an oral tablet and is a prescription prenatal vitamin. The recommended dose is two tablets daily or 1 tablet twice a day.

Meeting Objectives:

The objective of this meeting is to inform Intelliject that the proposed name 'e-cue' is not acceptable due to our concerns with potential name confusion between 'e-cue' and 'PreQue 10'.

Discussions:

DMEPA re-reviewed the proposed proprietary name 'e-cue' and have a concern related to phonetic similarity with the currently marketed product 'PreQue 10'. DMEPA acknowledged that this product was not evaluated in the prior review; however, 'PreQue 10' was marketed sometime after November 2011 and our previous review was completed in July 2011.

Although the products do not share all of the same product characteristics, DMEPA is concerned that these differences will not adequately prevent confusion between the name pair. This concern stems from the recent post-marketing error reported by ISMP, which describes confusion between Prenexa (multivitamin) and Ranexa (ranolazine) where a written prescription for Ranexa was dispensed instead of Prenexa. Although these products are marketed in different strengths and have different frequency of administration, due to the strong orthographic similarity, the confusion still occurred.

DMEPA is concerned that Preque has strong phonetic similarity to ecue. In addition, post marketing data indicates both these products can be written with instructions as "UAD" or "as directed", thereby minimizing the differences in the product characteristics.

DMEPA noted that PreQue 10 has the modifier '10'; however, post-marketing data indicates that modifiers are often dropped and therefore would minimize the differentiating factors.

DMEPA stated that typically when this issue is encountered, a firm may contact the company marketing the other product to identify the marketing status of the product, and if it is possible to transfer the trademark.

The sponsor responded to the suggestion of submitting another name by stating that Intelliject is very close to marketing and toward that end has invested substantial resources into the development of e-cue. Intelliject has begun manufacturing the first commercial lots of the product. Intelliject does not have another name ready to submit. A change the name could substantially delay the introduction of the product to the market.

The sponsor asked if there is an option to monitor the use of the product in comparison to PreQue-10 as a post-marketing commitment.

DMEPA responded that the Agency cannot comment on a post-marketing commitment and at this point is trying to resolve the current issue of the proprietary name. DMEPA stated that the Agency wants to avoid a potential confusing and possible life-threatening situation. An example is where a pregnant woman could possibly administer the epinephrine injection, and there is the possibility that an individual in anaphylaxis would not have realized that their prescription bag was incorrect until they open the bag and identified that it contained prenatal vitamins rather than epinephrine.

DMEPA stated that undertaking a post-marketing commitment would have to be thoroughly evaluated by the Division. Once a name is out in the public, it is difficult to change the lexicon of the prescribers. Changing a name is more difficult than it may appear.

The sponsor asked if the product was prescription only.

DMEPA responded that it is available by prescription only.

The sponsor asked what the timeframe would be for review of a new proprietary name if Intellject is unable to provide the requested data to alleviate FDA's concerns, or obtain the rights to the trade name.

DMEPA restated that the application can be approved under the existing condition without resolving the proprietary name. If there is a favorable action on the product prior to approving a viable name, a prior approval labeling supplement would need to be

completed by Intellijject. DMEPA responded that the Agency could expedite the review of the name and accommodate Intellijject to the greatest extent possible. It depends on the other actions that are occurring within the Agency. It is hard to provide an exact timeframe, but the Agency would commit to reviewing a new proprietary name expeditiously.

DMEPA has communicated this issue to the reviewing Division and that the proprietary name review is separate from the submission, further, the Agency can rule on the name, irrespective of the reviewing Division's review of Intellijject's request for final approval.

DMEPA recommended for Intellijject to submit an amendment to the trade name, which would include data to satisfy the FDA's concern and would ultimately make e-cue viable or Intellijject can opt to submit an alternate name for this product

DEMPA stated that in order to make ecue acceptable, Intellijject would need to submit the following:

- Information from Watson Pharma, Inc. (Watson) (the company marketing PreQue10)
    - Regarding the marketing status of PreQue10
    - If it is not prescribed, this might be convincing information by itself.
- Watson's agreement to release the trade name
- Contact drug information resources to remove the trademark Preque 10.

The sponsor questioned if Intellijject were to generate simulated prescribing information - such as used in proprietary name development, where a number of prescribers write down what they hear - if that would be sufficient.

DMEPA responded that the Agency has evaluated the type of statistical power that would be needed for a study such as this, and it would take approximately 20-25,000 study subjects. Simulation studies are typically used to identify possible safety issues, not to rule them out. DMEPA is unaware of any company that has tried to resolve a potential safety issue by conducting a simulation study, because of the study size required.

Regulatory Options:

1. Submit other name for review, or

2. Contact the manufacturer of PreQue-10 to attempt to purchase the trademark.

Conclusion:

The sponsor will communicate their decision on the regulatory options to either submit another name for review or contact the manufacturer of PreQue 10 by the end of the week, July 6, 2012.

The sponsor submitted clarifying questions via email and requested a teleconference on July 2, 2012.

Addendum:

The sponsor officially submitted a request for proprietary names on July 3, 2012.

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

/s/

NICHELLE E RASHID
08/10/2012

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

Date:	July 20 , 2011
Application Type/Number:	NDA 201739
Through:	Todd Bridges, RPh, Team Leader Kellie Taylor, PharmD, Associate Director Carol Holquist, RPh, Director Division of Medication Error Prevention and Analysis (DMEPA)
From:	Colleen E. Brennan, RPh, Safety Evaluator Division of Medication Error Prevention and Analysis (DMEPA)
Subject:	Proprietary Name Review
Drug Name and Strengths(s):	e-cue (Epinephrine Injection, USP) 0.3 mg: 0.3 mg/0.3 mL and 0.15 mg: 0.15 mg/0.15 mL
Applicant/Applicant:	Intellijject, Inc.
OSE RCM #:	2011-1378

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

CONTENTS

EXECUTIVE SUMMARY

This review summarizes DMEPA's evaluation of the proposed proprietary name, e-cue (epinephrine injection, USP). Our evaluation identified no concerns from a safety and promotional perspective that would render the name unacceptable. Thus, DMEPA finds the proposed proprietary name, e-cue, acceptable for this product. The Applicant will be notified by letter.

DMEPA considers this a final review; however, if approval of the NDA is delayed beyond 90 days from the date of this review, The Division of Pulmonary, Allergy, and Rheumatology Products (DPARP) should notify DMEPA because the proprietary name must be re-reviewed prior to the new approval date. Additionally, if any of the proposed product characteristics as stated in this review are altered, DMEPA rescinds this finding and the name must re-submitted for review. The conclusions upon re-review are subject to change.

1 BACKGROUND

1.1 INTRODUCTION

The Applicant, Intellijject, Inc. requested an assessment of the proposed proprietary name in a submission dated April 28, 2011, for NDA 201739.

The Division of Medication Error Prevention and Analysis (DMEPA) assesses a proposed proprietary name regarding its potential for name confusion with other proprietary or established drug names in the usual practice settings. Additionally, DMEPA considers the Division of Drug Marketing, Advertising and Communications' (DDMAC's) promotional assessment of the name.

1.2 PRODUCT INFORMATION

E-cue is the proposed proprietary name for epinephrine injection, USP. E-cue is indicated in the emergency treatment of allergic reactions (Type I) including anaphylaxis to stinging insects (e.g., order Hymenoptera, which include bees, wasps, hornets, yellow jackets and fire ants) and biting insects (e.g., triatoma, mosquitoes), allergen immunotherapy, foods, vaccines, drugs (e.g., penicillin, omalizumab), diagnostic testing substances (e.g., radiocontrast media) and other allergens, as well as idiopathic anaphylaxis or exercise-induced anaphylaxis.

Selection of the appropriate dosage strength (e-cue 0.3 mg or e-cue 0.15 mg) is determined according to patient body weight.

E-cue 0.3 mg delivers 0.3 mg epinephrine injection (0.3 mL, and is intended for patients who weigh 30 kg or more (approximately 66 pounds or more).

E-cue 0.15 mg delivers 0.15 mg epinephrine injection (0.15 mL, and is intended for patients who weigh 15 kg to 30 kg (33 pounds – 66 pounds).

Epinephrine is light sensitive and should be stored in the outer case provided to protect it from light. Store at 25°C (77°F); excursions permitted to 15°C-30°C (59°F-86°F) (See USP Controlled Room Temperature). Do not refrigerate.

2 METHODS AND MATERIALS

Appendix A describes the general methods and materials used by the Division of Medication Error Prevention and Analysis (DMEPA) when conducting a proprietary name risk assessment for all proprietary names. Sections 2.1, 2.2, and 2.3 identify specific information associated with the methodology for the proposed proprietary name, e-cue.

2.1 SEARCH CRITERIA

The DMEPA safety evaluators consider the spelling of the name, pronunciation of the name when spoken, and appearance of the name when scripted as outlined in Appendix A.

To identify drug names that may look similar to e-cue, the DMEPA safety evaluators also consider the orthographic appearance of the name on lined and unlined orders. Specific attributes taken into consideration include the length of the name (four letters), upstrokes (none), down strokes (none), cross strokes (none), dotted letters (none), and a hyphen (one). Additionally, several letters in e-cue may be vulnerable to ambiguity when scripted (See Appendix B). As a result, the DMEPA staff also considers these alternate appearances when identifying drug names that may look similar to e-cue. Furthermore, we evaluated the proposed name e-cue with a capital beginning letter as well as with a lowercase beginning letter, and we evaluated the name with the hyphen as well as without the hyphen.

When searching to identify potential names that may sound similar to e-cue, the DMEPA safety evaluators search for names with similar number of syllables (two), stresses (ee kue'), and placement of vowel and consonant sounds. (See Appendix B) The Sponsor's intended pronunciation (ee kue') was also taken into consideration, as it was included in the Proprietary Name Review Request. Additionally, names are often mispronounced and/or spoken with regional accents and dialects, so other potential pronunciations of the name are considered. Furthermore, we acknowledge that the Applicant submitted the proposed proprietary name with a hyphen, however, that may not be utilized in practice.

2.2 FDA PRESCRIPTION ANALYSIS STUDIES

In order to evaluate the potential for misinterpretation of the proposed proprietary name in handwriting and verbal communication of the name, medication orders were communicated during the FDA prescription studies.

Figure 1. e-cue Prescription Study (conducted on May 6, 2011)

HANDWRITTEN REQUISITION MEDICATION ORDER	VERBAL PRESCRIPTION
Inpatient Medication Order: e-cue 0.3mg UAD #1	e-cue 0.15 mg Dispense #1 UAD
Outpatient Medication Order: e-cue 0.15mg #1 UAD	

2.3 EXTERNAL PROPRIETARY NAME RISK ASSESSMENT

For this product, the Applicant submitted an external evaluation of the proposed proprietary name. The Division of Medication Error Prevention and Analysis conducts an independent analysis and evaluation of the data provided, and responds to the overall findings of the assessment. When the external proprietary

name risk assessment identifies potentially confusing names that were not captured in DMEPA's database searches or in the Expert Panel Discussion, these names are included in the Safety Evaluator's Risk Assessment and analyzed independently by the Safety Evaluator to determine if the potentially confusing name could lead to medication errors in usual practice settings.

After the Safety Evaluator has determined the overall risk associated with the proposed name, the Safety Evaluator compares the findings of their overall risk assessment with the findings of the proprietary name risk assessment submitted by the Applicant. The Safety Evaluator then determines whether the Division's risk assessment concurs or differs with the findings. When the proprietary name risk assessment differs, the Division of Medication Error Prevention and Analysis provides a detailed explanation of these differences.

3 RESULTS

The following sections describe the results of the proprietary name analysis that were identified during this review.

3.1 DATABASE AND INFORMATION SOURCES

DMEPA safety evaluator searches of the databases and DMEPA's information sources yielded a total of 26 names as having some similarity to the name, e-cue.

Twenty-two of the names were thought to look like e-cue. These include: Aceon, Acne, Carac, C-Caps, C-Cof, E.E.S., Ecee, Ecee plus, (b) (4)***, E-cream, E-gems, Ella, E-mycin, Erex, E-R-O, Errin, (b) (4)***, Estre, Evra, E-Z Cat, Ezol, and ICE. One name, Acute, was thought to sound like e-cue. The remaining 3 names, Cue, e-cue, (b) (4)*** were thought to look and sound similar to e-cue.

Additionally, DMEPA safety evaluators did not identify any United States Adopted Names (USAN) stems in the proposed proprietary name, as of June 23, 2011.

3.2 EXPERT PANEL DISCUSSION

The Expert Panel reviewed the pool of names identified by DMEPA safety evaluators (See Section 3.1 above) and noted no additional names thought to have orthographic or phonetic similarity to e-cue.

DDMAC had no concerns regarding the proposed name from a promotional perspective, and did not offer any additional comments relating to the proposed name.

3.3 FDA PRESCRIPTION ANALYSIS STUDIES

A total of 35 practitioners responded to the prescription analysis study. The majority of responses for all the studies were incorrect (n=21). There were three correct responses in the inpatient study and eleven correct responses in the outpatient study. The most common misinterpretation in the inpatient study was the letter 'l' for the first letter 'e'. In the outpatient study, the most common misinterpretation was the letter 'c' for the first letter 'e'. All of the responses in the Verbal Study were incorrect. The most common misinterpretation in the Verbal Study was the letter 'Q' for the letters 'cue'. See Appendix C for the prescription study responses.

3.4 EXTERNAL PROPRIETARY NAME RISK ASSESSMENTS

The April 28, 2011, submission from the Applicant included a proprietary name analysis conducted by the (b) (4) found the proposed proprietary name, e-cue, acceptable. Their study identified and evaluated a total of six names (Accupril, Acular, E-mycin, E.E.S., Ensure, and Icaps) for potential confusion with e-cue. Two of the names (E-mycin and E.E.S.) were also identified by DMEPA during the database searches. Therefore, DMEPA added the remaining four names to our analysis.

3.5 COMMENTS FROM THE REVIEW DIVISION

3.5.1 Initial Phase of Review

In response to a May 6, 2011, OSE e-mail, the Medical Officer for this application in the Division of Pulmonary, Allergy, and Rheumatology Products (DPARP) stated that writing this name in cursive on a handwritten prescription may tend to produce an illegible script; given the similar upstrokes of the e's and u's in cursive, this name could look very nondescript in cursive.

3.5.2 Midpoint of Review

DMEPA notified DPARP via e-mail that we had no concerns with the proposed proprietary name, e-cue, on July 18, 2011. Per e-mail correspondence from DPARP on July 20, 2011, they noted no concerns with the proposed proprietary name, e-cue.

3.6 SAFETY EVALUATOR RISK ASSESSMENT

Independent searches by the primary DMEPA safety evaluator resulted in the identification of one additional name which was thought to sound similar to e-cue and represent a potential source of drug name confusion. The name, CeeNu, was identified as having sound-alike similarities.

Thus, we identified in total, 31 names as having similarity to the proposed name.

4 DISCUSSION

The proposed name, e-cue, was evaluated from a safety and promotional perspective. Furthermore, input from pertinent disciplines involved with the review of this application was considered accordingly.

4.1 PROMOTIONAL ASSESSMENT

DDMAC had no concerns regarding the proposed name from a promotional perspective, and did not offer any additional comments relating to the proposed name. DMEPA and the DPARP concurred with the findings of DDMAC's promotional assessment of the proposed proprietary name.

4.2 SAFETY ASSESSMENT

Thirty-one names were identified for their potential similarity to the proposed name, e-cue. No other aspects of the name were determined to pose a different source for potential confusion with the name. Seventeen of the 31 names were eliminated for the reasons described in Appendices D and E. Appendix D lists proprietary names not likely to be confused or not used in usual practice settings for the reasons described**.** Appendix E describes the drug name which is the subject of this review. Since the trademark is licensed to the Applicant, it was eliminated from further analysis.

Failure mode and effects analysis (FMEA) was applied to determine if the proposed proprietary name could potentially be confused with the remaining 14 names and lead to medication errors. This analysis determined that the name similarity between e-cue and all of the 14 identified names was unlikely to result in medication error for the reasons presented in Appendix F.

5 CONCLUSIONS AND RECOMMENDATIONS

DMEPA concludes the proposed proprietary name is acceptable from both a promotional and safety perspective. However, if any of the proposed product characteristics as stated in this review are altered, DMEPA rescinds this finding and the name must be resubmitted for review. The conclusions upon re-review are subject to change. We will notify the Applicant of this finding via letter.

The proposed proprietary name, e-cue, must be re-reviewed if NDA approval is delayed beyond 90 days.

If you have further questions or need clarifications, please contact Nichelle Rashid, OSE Regulatory Project manager, at 301-796-3904.

5.1 COMMENTS TO THE APPLICANT

We completed our review of the proposed proprietary name, e-cue, and concluded that it is acceptable. The proposed proprietary name must be re-reviewed if NDA approval is delayed beyond 90 days.

If any of the proposed product characteristics as stated in this review are altered, DMEPA rescinds this finding and the name must be resubmitted for review

6 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.

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

DARRTS is a government database used to organize Applicant and Applicant 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. Electronic online version of the FDA Orange Book (http://www.fda.gov/cder/ob/default.htm)

The FDA Orange Book provides a compilation of approved drug products with therapeutic equivalence evaluations.

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

USPTO provides information regarding patent and trademarks.

9. 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.

10. Data provided by Thomson & Thomson's SAEGIS ™ Online Service, available at (www.thomson-thomson.com)

The Pharma In-Use Search database contains over 400,000 unique pharmaceutical trademarks and trade names that are used in about 50 countries worldwide. The data is provided under license by IMS HEALTH.

11. 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.

12. Stat!Ref (www.statref.com)

Stat!Ref contains full-text information from approximately 30 texts; it includes tables and references. Among the database titles are: Handbook of Adverse Drug Interactions, Rudolphs Pediatrics, Basic Clinical Pharmacology, and Dictionary of Medical Acronyms Abbreviations.

13. 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.

14. Red Book Pharmacy's Fundamental Reference

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

15. Lexi-Comp (www.lexi.com)

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

16. Medical Abbreviations Book

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

APPENDICES

Appendix A:

FDA's Proprietary Name Risk Assessment considers the potential for confusion between the proposed proprietary name and the proprietary and established names of drug products existing in the marketplace and those pending IND, NDA, BLA, and ANDA products currently under review by the Center. 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]

For the proposed proprietary name, DMEPA staff search a standard set of databases and information sources to identify names with orthographic and phonetic similarity and hold a Center for Drug Evaluation and Research (CDER) Expert Panel discussion to gather professional opinions on the safety of the proposed proprietary name. DMEPA staff also conducts internal CDER prescription analysis studies. When provided, DMEPA considers external prescription analysis study results and incorporate into the overall risk assessment.

The Safety Evaluator assigned to the Proprietary Name Risk Assessment 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 focuses on the avoidance of medication errors.

FMEA is a systematic tool for evaluating a process and identifying where and how it might fail. [2] DMEPA uses FMEA to analyze whether the drug names identified with orthographic or phonetic similarity to the proposed proprietary name could cause confusion that subsequently leads to medication errors in the clinical setting. 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.

In addition, the product characteristics provide the context for the verbal and written communication of the drug names and can interact with the orthographic and phonetic attributes of the names to increase the risk of confusion when there is overlap or, in some instances, decrease the risk of confusion by helping to differentiate the products through dissimilarity. Accordingly, the DMEPA staff considers the product characteristics associated with the proposed drug 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.

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. Because drug name confusion can occur at any point in the medication use process, DMEPA staff 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.[3] DMEPA provides the product characteristics considered for this review in section one.

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

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

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

The Division of Medication Error Prevention and Analysis considers the spelling of the name, pronunciation of the name when spoken, and appearance of the name when scripted. DMEPA also compares the spelling of the proposed proprietary name with the proprietary and established name of existing and proposed drug products because similarly in spelled names may have greater likelihood to sound similar to one another when spoken or look similar to one another when scripted. DMEPA staff also examines the orthographic appearance of the proposed name using a number of different handwriting samples. Handwritten communication of drug names has a long-standing association with drug name confusion. Handwriting can cause similarly and even dissimilarly spelled drug name pairs to appear very similar to one another. The similar appearance of drug names when scripted has led to medication errors. The DMEPA staff applies expertise gained from root-cause analysis of such 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). In addition, the DMEPA staff 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. If provided, DMEPA will consider the Applicant's intended pronunciation of the proprietary name. However, DMEPA also considers a variety of pronunciations that could occur in the English language because the Applicant has little control over how the name will be spoken in clinical practice.

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 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, the DMEPA staff also 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 staff conducts searches of 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 using the criteria outlined in Section 2.1. Section 6 provides a standard description of the databases used in the searches. To complement the process, the DMEPA staff use 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, the DMEPA staff review 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.

2. CDER Expert Panel Discussion

DMEPA conducts an Expert Panel Discussion to gather CDER professional opinions on the safety of the proposed product and the proposed proprietary name. The Expert Panel is composed of Division of Medication Errors Prevention (DMEPA) staff and representatives from the Division of Drug Marketing, Advertising, and Communications (DDMAC). 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 DMEPA staff to the Expert Panel for consideration. Based on the clinical and professional experiences of the Expert Panel members, the Panel may recommend the addition of 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 Analysis 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 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 the 123 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 send their interpretations of the orders via e-mail to DMEPA.

4. Comments from the OND review Division or Generic drugs

DMEPA requests the Office of New Drugs (OND) or Office of Generic Drugs (OGD) Regulatory Division responsible for the application for their comments or concerns with the proposed proprietary name and 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 DDMAC's decision on the name. The primary Safety Evaluator addresses any comments or concerns in the safety evaluator's assessment.

The OND or 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 concur/not concur with DMEPA's final decision.

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, conducts a Failure Mode and Effects Analysis, and provides an overall 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.[4] 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 characteristics listed in Section one. 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?"***

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. 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.

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 Risk Assessment:

a. DDMAC finds the proposed proprietary name misleading from a promotional perspective, and the Review Division concurs with DDMAC'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)].

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

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.

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 is likely to recommend that the Applicant select an alternative proprietary name and submit the alternate name to the Agency for DMEPA to 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 Applicant 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. However, the safety concerns set forth in criteria a through e 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 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 a preventable source of medication error that, in many instances, the Agency and/or Applicant 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. Applicants have undertaken higher-leverage strategies, such as drug name changes, in the past but at great financial cost to the Applicant 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 Applicants' 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. (See Section 4 for limitations of the process).

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 is likely to recommend that the Applicant select an alternative proprietary name and submit the alternate name to the Agency for DMEPA to 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 Applicant 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.

Appendix B: Letters with Possible Orthographic or Phonetic Misinterpretation

Letters in Name, e-cue	Scripted may appear as	Spoken may be interpreted as
lowercase 'E'	C, f	----------
lowercase 'c'	a, e, i, l	z, k, s, if followed by e or i
lowercase 'u'	n, y, v, w, any vowel	----------
lowercase 'e'	a, i, l, p	any vowel

Appendix C: FDA Prescription Study Responses (conducted on May 6, 2011)

		86 People Received Study 35 People Responded
INPATIENT	**VOICE**	**OUTPATIENT**
E-CUE (3)	ECUBE (1)	C-CUE (2)
I-CUE (1)	EQ (10)	E-CUE (11)
L-CUE (3)	EQ #1 UAD (1)	E-CUL (1)
LCUE (1)	EQUE (1)	

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

Product Name	Similarity to e-cue	Failure preventions
Accupril	Looks alike	Lacks sufficient orthographic similarity
Acular	Looks alike	Lacks sufficient orthographic similarity
E-mycin	Looks alike	Lacks sufficient orthographic similarity
Ensure	Looks alike	Lacks sufficient orthographic similarity
E-Z cat	Looks alike	Lacks sufficient orthographic similarity
(b) (4) ***	Looks and sounds alike	Lacks sufficient orthographic and phonetic similarity. Name for IND- (b) (4) in DARRTS last entry in DARRTS 5-02-1996
Acute	Sounds alike	Referring to a health effect, usually of rapid onset, brief, not prolonged; sometimes loosely used to mean severe. (mediLexicon Dictionary accessed 5/27/2011).
CUE	Looks and sounds alike	Medical Abbreviation for 'Cumulative Urinary Excretion'.
(b) (4) ***	Looks alike	Proposed name for OSE #2006-857 January 20, 2007; turned down because the name appeared to be a medical abbreviation or an acronym for a (b) (4) Still under the IND, so no approved name as of 5/27/2011.
E-Cream	Looks alike	Name found in Facts and Comparisons but no additional information found in any other drug reference, including Red Book. No information available about manufacturer.
(b) (4) ***	Looks alike	Proposed name for (b) (4); turned down in an email to company January 4, 2011. Alternate name still under review.
Estre	Looks alike	Proprietary name for a levothyroxine product no longer marketed per Clinical Pharmacology website accessed 5/27/2011. Generic levothyroxine is currently marketed. VONA accessed 7/6/2011 showed no prescriptions written for name "Estre" in last ten years.
Evra	Looks alike	Proprietary name outside the U.S. for "Ortho Evra". Not available in U.S. as "Evra", thus lacks sufficient orthographic similarity.
Ezol	Looks alike	Proprietary name for an acetaminophen-butalbital-caffeine combination product no longer marketed per Clinical Pharmacology website accessed 5/27/2011. Generic acetaminophen-butalbital-caffeine combination products are currently marketed.
Icaps	Looks alike	Lacks sufficient orthographic similarity
ICE	Looks alike	Medical Abbreviation for chemotherapy regimen of Idarubicin, Cytarabine, Etoposide (ICE Protocol).

Appendix E: Drug name which is the subject of this review

Proprietary Name	Source
e-cue	USPTO

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

Proposed name: e-cue Auto-injector (epinephrine injection, USP) **Failure Mode: Incorrect Product Ordered/ Selected/Dispensed or Administered because of Name confusion**	**Strength(s):** • e-cue 0.3 mg: 0.3 mg/0.3 mL epinephrine injection, USP pre-filled auto-injector • e-cue 0.15 mg: 0.15 mg/0.15 mL epinephrine injection, USP pre-filled auto-injector **Causes (could be multiple)**	**Usual dose:** • Patients greater than or equal to 30 kg (66 lbs): e-cue 0.3 mg • Patients 15 to 30 kg (33 lbs – 66 lbs): e-cue 0.15 mg Inject e-cue intramuscularly or subcutaneously into the anterolateral aspect of the thigh, through clothing if necessary. Each device is a single-use injection. **Prevention of Failure Mode**
Aceon (Perindopril) Tablets 2 mg, 4 mg, and 8 mg Usual Dose 4 mg to 8 mg once daily	Orthographic Both names have no upstrokes or downstrokes. The letter 'a' when scripted could appear as the letter 'e'. Additionally, they both have the letter 'c' in the second position.	Variations in product characteristics minimize the potential for confusion. (auto-injector versus oral tablet) No overlap in strength or Route of administration: intramuscular or subcutaneous versus oral Frequency of administration: one time only single injection versus once daily dosing
Acne (Benzoyl peroxide) Topical Gel 5%, 10% Usual Dose Apply topically to affected area once daily	Orthographic Both names have no upstrokes or downstrokes. The letter 'a' when scripted could appear as the letter 'e'. Additionally, they have the letter 'c' in the second position, end in the letter 'e', are two syllables in length, and both names have the same number of letters (four).	Variations in product characteristics minimize the potential for confusion. (auto-injector versus topical gel) No overlap in strength or Route of administration: intramuscular or subcutaneous versus topical application Frequency of administration: one time only single injection versus once daily dosing
Carac (Fluorouracil) Topical Cream 0.5% Usual Dose Apply 0.5% cream twice daily in an amount sufficient to cover lesion	Orthographic Both names have no upstrokes or downstrokes. The letter 'c' when scripted could appear as the letter 'e'. Additionally, both names are two syllables in length. Numerical overlap in strengths exists (0.5% versus 0.15 mg)	Variations in product characteristics minimize the potential for confusion. (auto-injector versus topical cream) No overlap in route of administration: intramuscular or subcutaneous versus topical application Frequency of administration: one time only single injection versus twice daily dosing

C-Caps (Vitamin C) 1,500 mg Oral Capsules <u>Usual Dose</u> 3,000 mg between meals as needed	<u>Orthographic</u> Both names have no upstrokes. The letter 'c' when scripted could appear as the letter 'e'.	<u>Orthographic</u> The name C-Caps does have 1 downstroke ('p') versus e-cue which has no downstrokes Variations in product characteristics minimize the potential for confusion. (auto-injector versus oral capsules) No overlap in strength or Route of administration: intramuscular or subcutaneous versus oral Frequency of administration: one time only single injection versus daily dosing between meals
C-Cof XP (Guaifenesin; hydrocodone; pseudoephedrine) 100 mg-2.5 mg-15 mg/ 5mL <u>Usual Dose</u> 12 years old and up: 5 mL 4 hours apart, not to exceed 6 teaspoonfuls in a 24 hour period. 6 to 12 years of age: Initial dose 2.5 mL; maximum single dose, 5 mL.	<u>Orthographic</u> The letter 'c' when scripted could appear as the letter 'e'. The root of each name is comprised of four letters, with a hyphen in the second position.	<u>Orthographic</u> The name C-Cof does have 1 upstroke ('f') versus e-cue which has none Variations in product characteristics minimize the potential for confusion. (auto-injector versus oral syrup) No overlap in strength or Route of administration: intramuscular or subcutaneous versus oral Frequency of administration: one time only single injection versus multiple daily dosing
CeeNu (lomustine) 10 mg , 40 mg , and 100 mg Capsules <u>Usual Dose</u> Adult and pediatric: 130 mg/m^2 as a single oral dose every 6 weeks	<u>Phonetic</u> The 1st syllable of each name has the long 'e' sound ('ee') and the 2nd syllable of each name has a long 'u' sound ('ue').	Variations in product characteristics minimize the potential for confusion. (auto-injector versus oral capsule) No overlap in strength or Route of administration: intramuscular or subcutaneous versus oral Frequency of administration: one time only single injection versus every 6 weeks dosing
ECEE (abbreviation for ECEE Plus) (Vitamin C, Magnesium Sulfate, Vitamin E, Zinc Sulfate) oral tablets (100 mg-10 mg-200 IU-18 mg) <u>Usual Dose</u> As one tablet as directed with meals	<u>Orthographic</u> If the abbreviation ECEE is used for this product as is done by Walgreens, then both names have the same number of letters (four), start with the letter 'e' and end with the letter 'e'. Additionally, both names have no upstrokes or downstrokes, and are two syllables in length.	<u>Orthographic</u> The name ECEE Plus is two words versus one word e-cue Variations in product characteristics minimize the potential for confusion. (auto-injector versus oral tablets) No overlap in strength or Route of administration: intramuscular or subcutaneous versus oral Frequency of administration: one time only single injection versus daily dosing with meals

ECEE Plus (Vitamin C, Magnesium Sulfate, Vitamin E, Zinc Sulfate) oral tablets (100 mg-10 mg-200 IU-18 mg) Usual Dose As one tablet as directed with meals	Orthographic If the abbreviation ECEE is used for this product as is done by Walgreens, then both names have the same number of letters (four), start with the letter 'e' and end with the letter 'e'. Additionally, both names have no upstrokes or downstrokes, and are two syllables in length.	Orthographic The name ECEE Plus is two words versus one word e-cue Variations in product characteristics minimize the potential for confusion. (auto-injector versus oral tablets) No overlap in strength or Route of administration: intramuscular or subcutaneous versus oral Frequency of administration: one time only single injection versus daily dosing with meals
E.E.S (Erythromycin ethylsuccinate) 200 mg and 400 mg Usual Dose Adults: Take 400 mg every six hours Children: Take 30 mg to 50 mg per kg per day	Orthographic Both names start with the letter 'e' and have no upstrokes or downstrokes. Additionally, the second letters of each name ('e' and 'c') may appear similar to each other when scripted in a lowercase.	Variations in product characteristics minimize the potential for confusion. (auto-injector versus oral suspension, granules for oral suspension, and oral tablets) No overlap in strength or Route of administration: intramuscular or subcutaneous versus oral Frequency of administration: one time only single injection versus four times daily dosing
E-Gems (Vitamin E) 400 IU capsules Usual Dose One 400 IU capsule orally once daily	Orthographic Both names start with the letter 'e' and are two syllables in length.	Orthographic The name E-Gems has one downstroke ('g') in the second letter position versus e-cue which has no downstrokes. Variations in product characteristics minimize the potential for confusion. (auto-injector versus oral tablets) No overlap in strength or Route of administration: intramuscular or subcutaneous versus oral Frequency of administration: one time only single injection versus once daily dosing
ella (Ulipristal) 30 mg Oral Tablet Usual Dose One 30 mg tablet orally	Orthographic Both names start with the letter 'e', have the same number of letters (four) are two syllables in length. They are both intended to be written in all lowercase letters. Overlapping Product Characteristic Frequency of administration: one time only dose. Numerical overlap in strengths exists (30 mg, versus 0.3 mg)	Orthographic The name ella has two upstrokes ('ll') in the second and third letter positions versus e-cue which has no upstrokes. Variations in product characteristics minimize the potential for confusion. (auto-injector versus oral tablets) No overlap in route of administration: intramuscular or subcutaneous versus oral

Erex (Yohimbine) 5.4 mg Oral Tablet Usual Dose Take one 5.4 mg tablet orally three times daily	Orthographic Both names start with the letter 'e' and have no upstrokes or downstrokes. Additionally, both names have the same number of letters (four), and are two syllables in length.	Variations in product characteristics minimize the potential for confusion. (auto-injector versus oral tablets) No overlap in strength or Route of administration: intramuscular or subcutaneous versus oral Frequency of administration: one time only single injection versus three times daily dosing
E-R-O (Carbamide Peroxide) 6.5% Ear Drops Usual Dose Instill 5-10 drops into the external ear canal twice daily as needed for up to 4 consecutive days	Orthographic Both names start with the letter 'e' and have no upstrokes or downstrokes. Additionally, the last letters of each name ('e' and 'o') may appear similar to each other when scripted.	Variations in product characteristics minimize the potential for confusion. (auto-injector versus otic drops) No overlap in strength or Route of administration: intramuscular or subcutaneous versus otic instillation Frequency of administration: one time only single injection versus twice daily dosing for up to 4 consecutive days
Errin (Norethindrone) 0.35 mg Oral Tablet Usual Dose Take one 0.35 mg tablet orally once daily continuing every day of the year	Orthographic Both names start with the letter 'e' and have no upstrokes or downstrokes. Additionally, both names are two syllables in length. Numerical overlap in strengths exists (0.35 mg versus 0.3 mg)	Variations in product characteristics minimize the potential for confusion. (auto-injector versus oral tablets) No overlap in route of administration: intramuscular or subcutaneous versus oral Frequency of administration: one time only single injection versus once daily dosing for one year

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/s/

COLLEEN BRENNAN
07/20/2011

TODD D BRIDGES
07/20/2011

KELLIE A TAYLOR
07/20/2011

CAROL A HOLQUIST
07/20/2011

Department of Health and Human Services
Public Health Service
Food and Drug Administration
Center for Drug Evaluation and Research
Office of Surveillance and Epidemiology

Date:	December 28, 2010
Application Type/Number:	NDA 201739
Through:	Todd Bridges RPh, Team Leader Carol Holquist, RPh, Director Division of Medication Error Prevention and Analysis (DMEPA)
From:	Colleen Brennan, RPh, Safety Evaluator Division of Medication Error Prevention and Analysis (DMEPA)
Subject:	Proprietary Name Review
Drug Name(s):	(b) (4) (epinephrine injection, USP) 0.3 mg: 0.3 mg/0.3 mL and 0.15 mg: 0.15 mg/0.15 mL
Applicant:	Intellijject, Inc.
OSE RCM #:	RCM 2010-2300

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COLLEEN BRENNAN
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TODD D BRIDGES
12/28/2010

DENISE P TOYER on behalf of CAROL A HOLQUIST
12/28/2010