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RESEARCH**

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PROPRIETARY NAME REVIEW(S)

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Subject: Proprietary Name Review

Drug Name: Viibryd (Vilazodone Hydrochloride) Tablets
10 mg, 20 mg, and 40 mg

Applicant: PGxHealth, LLC

OSE RCM #: 2010-1849

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

CONTENTS

EXECUTIVE SUMMARY	3
1 BACKGROUND	3
1.1 Introduction	3
1.2 Regulatory History	3
1.3 Product Information	3
2 METHODS AND MATERIALS	3
2.1 Search Criteria	4
2.2 FDA Prescription Analysis Studies	4
2.3 External Proprietary Name Risk Assessment	5
3 RESULTS	5
3.1 Database and Information Sources	5
3.2 CDER Expert Panel Discussion	5
3.3 FDA Prescription Analysis Studies	5
3.4 External Proprietary Name study	5
3.5 Comments from the Division of Psychiatry Products (DPP)	6
3.6 Safety Evaluator Risk Assessment	6
4 DISCUSSION	6
4.1 Promotional Assessment	6
4.2 Safety Assessment	6
5 CONCLUSIONS AND RECOMMENDATIONS	7
5.1 Comments To The Applicant	7
6 REFERENCES	8
APPENDICES	9

EXECUTIVE SUMMARY

This review summarizes DMEPA's proprietary name risk assessment of Viibryd for Vilazodone Hydrochloride Tablets, 10 mg, 20 mg, and 40 mg. Our evaluation did not identify concerns that would render the name unacceptable based on the product characteristics and safety profile known at the time of this review. Thus, DMEPA finds the proposed proprietary name, Viibryd, acceptable for this product. The proposed proprietary name must be re-reviewed 90 days before approval of the NDA. The Applicant will be notified via letter of these findings.

Additionally, 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.

1 BACKGROUND

1.1 INTRODUCTION

This review responds to an August 23, 2010 request from PGxHealth, LLC for an assessment of the proposed proprietary name, Viibryd, regarding potential name confusion with other proprietary or established drug names in the usual practice settings. The Applicant submitted an independent name assessment completed by (b) (4)

Additionally, the container labels, carton and insert labeling are being evaluated for their potential contribution to medication errors under separate cover (OSE Review 2010-826).

1.2 REGULATORY HISTORY

The Applicant initially submitted the proposed name, (b) (4) for our evaluation. DMEPA found the name unacceptable (see OSE Review 2010-967, dated August 2, 2010) (b) (4)

Thus, the Applicant has submitted the proposed name, Viibryd, for our evaluation.

1.3 PRODUCT INFORMATION

Viibryd is the proposed proprietary name for Vilazodone Tablets. Viibryd is a dual-acting selective serotonin reuptake inhibitor and 5-HT_{1A} receptor partial agonist, indicated for the treatment of major depressive disorder. The recommended dosage is 40 mg once daily. Viibryd should be titrated, starting with an initial dose of 10 mg once daily for seven days followed by 20 mg once daily for an additional seven days. Viibryd will be supplied in 10 mg, 20 mg, and 40 mg strengths. The following packaging configurations will be available: 30-count, 90-count, 500-count, 10 x 10 count blister cards, and a 30-count titration pack. Viibryd should be stored at room temperature.

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, Viibryd.

2.1 SEARCH CRITERIA

For this review, particular consideration was given to drug names beginning with the letter ‘V’ when searching to identify potentially similar drug names, as 75% of the confused drug names reported by the USP-ISMP Medication Error Reporting Program involve pairs beginning with the same letter.^{1,2}

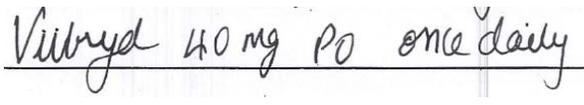
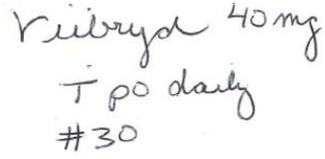
To identify drug names that may look similar to Viibryd, the DMEPA Safety Evaluators also consider the orthographic appearance of the name on lined and unlined orders. Specific attributes taken into consideration include the length of the name (seven letters), upstrokes (two, lower case ‘b’ and ‘d’), downstrokes (one, lower case ‘y’), cross strokes (none), and dotted letters (two, lower case ‘i’ and ‘i’). Additionally, several letters in Viibryd may be vulnerable to ambiguity when scripted (see Appendix B). As a result, the DMEPA Safety Evaluators also considers these alternate appearances when identifying drug names that may look similar to Viibryd.

When searching to identify potential names that may sound similar to Viibryd, the DMEPA Safety Evaluators search for names with similar number of syllables (two), stresses (VII-bryd or vii-BRYD), and placement of vowel and consonant sounds. Additionally, the DMEPA Safety Evaluators consider that pronunciation of parts of the name can vary (see Appendix B). The Applicant’s intended pronunciation of the name is “VYE-brid”. However, names are often mispronounced and/or spoken with regional accents and dialects, so other potential pronunciations of the name are considered.

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, the following inpatient medication order, outpatient and verbal prescription was communicated during the FDA prescription studies.

Figure 1. Viibryd Prescription Studies (conducted on September 2, 2010)

HANDWRITTEN REQUISITION MEDICATION ORDER	VERBAL PRESCRIPTION
<p><u>Inpatient Medication Order:</u></p> 	“Viibryd 40 mg po once daily”
<p><u>Outpatient Prescription:</u></p> 	

¹ Institute for Safe Medication Practices. Confused Drug Name List (1996-2006). Available at <http://www.ismp.org/Tools/confuseddrugnames.pdf>

² Kondrack, G and Dorr, B. Automatic Identification of Confusable Drug Names. Artificial Intelligence in Medicine (2005)

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 assessments differ, the Division of Medication Error Prevention and Analysis provides a detailed explanation of these differences.

3 RESULTS

The following sections describe DMEPA's findings from the database searches, CDER Expert Panel Discussion, FDA prescription analysis studies, and the external proprietary name study.

3.1 DATABASE AND INFORMATION SOURCES

The DMEPA searches yielded a total of 17 names as having some similarity to the name Viibryd.

Eight of the 17 names were thought to look like Viibryd. These names are Velban, Valcyte, Librium, Vazobid, Vidaza, Nuvigil, Uracid, and Urised. Two of the names were thought to sound like Viibryd. These names are Zegerid and Vpriv. The remaining seven names, Vibradox, Vibramycin, Veripred, Vibra-Tabs, Vibativ, VIGIV, and Viread were thought to look and sound similar to Viibryd.

Additionally, DMEPA Safety Evaluators did not identify any United States Adopted Names (USAN) stems in the proposed proprietary name as of September 2, 2010.

3.2 CDER 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 Viibryd. However, the panel commented: "Analyze the name with one 'i', two e's, one 'u', 'ie', and 'w'."

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 34 practitioners responded. Eleven practitioners interpreted the name correctly as "Viibryd". The remainder of the practitioners misinterpreted the drug name. None of the responses overlapped with any existing or proposed drug names. In the verbal studies, all responses were misspelled phonetic variations of the proposed name, Viibryd. See Appendix C for the complete listing of interpretations from the verbal and written prescription studies.

3.4 EXTERNAL PROPRIETARY NAME STUDY

The proposed name risk assessment submitted by the Applicant and conducted by (b) (4) concluded that the proposed name did not pose a risk for confusion. (b) (4) identified and evaluated a total of six drug names for their potential confusion with the proposed proprietary name Viibryd.

Five of the six names (Nuvigil, Vibra-Tabs, Vibramycin, Veetids, and Viread) were identified by DMEPA Safety Evaluators. The one name not identified by DMEPA, Vicodin, was added to the list and evaluated in our risk assessment of this name (see Section 4.2).

3.5 COMMENTS FROM THE DIVISION OF PSYCHIATRY PRODUCTS (DPP)

3.5.1 Initial Phase of Review

In response to the email sent to the Division of Psychiatry Products (DPP) on September 2, 2010, DPP stated “We have no concerns.”

3.5.2 Midpoint of Review

On November 3, 2010, DMEPA notified DPP via e-mail that we had no objections to the proposed proprietary name, Viibryd. Per e-mail correspondence from DPP on November 8, 2010, the Division stated “We have no objections.”

3.6 SAFETY EVALUATOR RISK ASSESSMENT

Independent searches by the primary Safety Evaluator resulted in identification of four additional names which were thought to look or sound similar to Viibryd and represent a potential source of drug name confusion. The names identified to have look-alike similarities are Lubrin, Lubrex, and Valtrex. The name, Veetids, was identified to have look-alike and sound-alike similarities .

 (b) (4)
Therefore, Vyvanse was added to the list of names for inclusion in this review.

Thus, we evaluated a total of 23 names: 17 identified in Database and Information Sources (Section 3.1), one identified in the External Study (Section 3.4), and five identified in this section by the primary Safety Evaluator.

4 DISCUSSION

This proposed name was evaluated from a safety and promotional perspective based on the product characteristics provided by the Applicant. We sought input from pertinent disciplines involved with the review of this application and considered it accordingly.

4.1 PROMOTIONAL ASSESSMENT

DDMAC evaluated the name Viibryd from a promotional perspective and determined the name was acceptable. The Division of Psychiatry Products and the Division of Medication Error Prevention and Analysis concurred with this assessment.

4.2 SAFETY ASSESSMENT

In total, 23 names were identified as potential sources of name confusion with the proposed proprietary name, Viibryd. DMEPA did not identify other aspects of the name that could function as a source of error. Ten of the 23 names were eliminated for the following reasons: nine names lack orthographic and/or phonetic similarity and one name is a foreign drug name (see Appendices D and E).

Failure mode and effects analysis (FMEA) was then conducted to determine if the proposed name could potentially be confused with the remaining 13 names and lead to medication errors.

This analysis determined that the name similarity between Viibryd and these 13 products is unlikely to result in medication errors for the reasons presented in Appendices F and G. This finding is consistent with and supported by an independent risk assessment of the proprietary name submitted by the Applicant.

(b) (4)

5 CONCLUSIONS AND RECOMMENDATIONS

The Proprietary Name Risk Assessment findings indicate that the proposed name, Viibryd, is not promotional nor is it vulnerable to name confusion that could lead to medication errors. Thus, the Division of Medication Error Prevention and Analysis (DMEPA) has no objection to the proprietary name, Viibryd, for this product at this time.

However, if any of the proposed product characteristics as stated in this review are altered prior to approval of this product, DMEPA rescinds this Risk Assessment finding and the name must be resubmitted for review. In the event that our Risk Assessment finding is rescinded, the evaluation of the name on resubmission is independent of the previous Risk Assessment, and as such, the conclusions on re-review of the name are subject to change. If the approval of this application is delayed beyond 90 days from the signature date of this review, the proposed name must be re-evaluated. If you have further questions or need clarifications, please contact Sandra Griffith, OSE Project Manager, at 301-796-2445.

5.1 COMMENTS TO THE APPLICANT

We have completed our review of the proposed proprietary name, Viibryd, and have concluded that it is acceptable. Viibryd will be re-reviewed 90 days prior to the approval of the NDA. If we find the name unacceptable following the re-review, we will notify you.

6 REFERENCES

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

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

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

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. This is a database which was created for the Division of Medication Error Prevention and Analysis, FDA.

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

Drug Facts and Comparisons is a compendium organized by therapeutic course; 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 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. *Electronic online version of the FDA Orange Book* (<http://www.fda.gov/cder/ob/default.htm>)

Provides a compilation of approved drug products with therapeutic equivalence evaluations.

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

Provides information regarding patent and trademarks.

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

Contains full monographs for the most common drugs in clinical use, plus mini monographs covering investigational, less common, combination, nutraceutical and nutritional products. 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)**

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)**

Contains full-text information from approximately 30 texts. Includes tables and references. Among the database titles are: Handbook of Adverse Drug Interactions, Rudolph's Pediatrics, Basic Clinical Pharmacology and Dictionary of Medical Acronyms Abbreviations.

13. **USAN Stems (<http://www.ama-assn.org/ama/pub/category/4782.html>)**

List contains all the recognized USAN stems.

14. **Red Book Pharmacy's Fundamental Reference**

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

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

A web-based searchable version of the Drug Information Handbook.

16. **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.³

For the proposed proprietary name, DMEPA Safety Evaluators 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 Safety Evaluators also conduct internal CDER prescription analysis studies. When provided, DMEPA considers external prescription analysis study results and incorporate into the overall risk assessment.

³ National Coordinating Council for Medication Error Reporting and Prevention.
<http://www.nccmerp.org/aboutMedErrors.html>. Last accessed 10/11/2007.

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.⁴ 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 Safety Evaluators 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 Safety Evaluators consider 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 Safety Evaluators consider 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.⁵ DMEPA provides the product characteristics considered for this review in section one.

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 spelled names may have greater likelihood to sound similar to one another when spoken or look similar to one another when scripted. DMEPA Safety Evaluators also examine 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 Safety Evaluators apply 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 Safety Evaluators compare 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.

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

⁵ 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Names may sound similar when pronounced and lead to drug name confusion in verbal communication

Lastly, the DMEPA Safety Evaluators also consider 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 Safety Evaluators conduct 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 Safety Evaluators 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 Safety Evaluators 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) Safety Evaluators 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.⁶ 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 possess 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)].

⁶ 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), Joint Commission on Accreditation of Hospitals (JCOAH), 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).

Appendix B: Letters with possible orthographic or phonetic misinterpretation

Letters in proposed name “Viibryd”	When scripted may appear as:	When spoken may be interpreted as:
Capital ‘V’	b, C, L, r, U	B
lower case ‘i’	e, j, o, r	any vowel
lower case “ii”	a, ee, ie, il, ei, el, o, u	
lower case ‘b’	h, lo, n, v	p
lower case ‘r’	h, s, v	
lower case ‘y’	g, j, x	eye, i
lower case ‘d’	a, cl, ol	
Vii		Vi, Vie, Vy, Vye
bryd		brid, bred

Appendix C: FDA Prescription Study Responses

Inpatient Medication Order	Outpatient Medication Order	Voice Prescription
Viibryd	Vubryd	Vibrid
Viibryd	Viibryd	Vibrid
Viosteon	Viibryol	Vibrid
Vubryd	Viibryd	Vibrid
Viibryd	Viibryd	Vibrid
Vubryel	Viibryd	Vibrid.
Vubryd?	Vubryd	Vibrid
Viibryel	Viibryd	Vibrid
Viibryel	Vubryd	Vibrid
Vubryd	Viibryd	
Vubryd	Viibryd	
	Vubryd	
	Viibryd	
	Vubryd	

Appendix D: Names Lacking Orthographic and/or Phonetic Similarity.

Name	Similarity to Viibryd
Librium	Look
Vazobid	Look
Uracid	Look
Urised	Look
Zegerid	Sound
Vicodin	Sound
Vibramycin	Look and Sound
Veripred	Look and Sound
VIGIV	Look and Sound

Appendix E: Proprietary or Established Names used only in Foreign Countries

Proprietary Name	Similarity to Viibryd	Country	Description
Vibradox	Look and Sound	Denmark	Doxycycline

Appendix F: Products with multiple differentiating product characteristics and/or orthographic/phonetic differences

Product name with potential for confusion	Similarity to Viibryd	Strength	Signa	Differentiating Product Characteristics (Viibryd vs. Product)
Viibryd (Vilazodone) Tablets	N/A	10 mg, 20 mg, and 40 mg	10mg orally once daily for 7 days, then 20 mg once daily for 7 days, then 40 mg once daily	N/A
Velban (Vinblastine Sulfate) for Injection <i>This NDA was withdrawn by the Commissioner in 2007. Generics are available</i>	Look	10 mg	3.7 mg/m ² to 18.5 mg/m ² intravenously once per week	The ending letters in the names (“ryd” vs. “an”) do not look similar. <i>Route of administration:</i> Oral vs. intravenous <i>Dosage form:</i> Tablet vs. for injection <i>Frequency of administration:</i> Once daily vs. once weekly
Vidaza (Azacitidine) for Injection	Look	100 mg	75 mg/m ² to 100 mg/m ² subcutaneously or intravenously once daily for seven days, every four weeks (For BSA 1.73 m ² : 130 mg to 173 mg)	The third position “i” and the ending upstroke letter “d” in Viibryd helps to differentiate the names. <i>Dose:</i> 10 mg, 20 mg, or 40 mg vs. 75 mg/m ² to 100 mg/m ² <i>Route of administration:</i> Oral vs. subcutaneous or intravenous
Vibativ (Telavancin) for injection	Look and Sound	250 mg and 750 mg	7.5 mg/kg to 10 mg/kg intravenously every 24 hour or every 48 hours	The ending letters in the names (“ryd” vs. “ativ”) do not look similar. <i>Dose:</i> 10 mg, 20 mg, or 40 mg vs. 7.5 mg/kg to 10 mg/kg (For 70 kg: 525 mg to 700 mg) <i>Route of administration:</i> Oral vs. intravenous
Veetids (Penicillin V) Tablets Powder for oral solution <i>This product was discontinued in 2008. Generics are available.</i>	Look and Sound	Tablets: 50 mg Powder for oral solution: 125 mg/5 mL and 250 mg/5 mL	Adults: 125 mg to 500 mg every 6 to 8 hours Children: 25 mg/kg/day to 50 mg/kg/day	The downstroke letter “y” and ending upstroke letter “d” in Viibryd helps to differentiate the names. <i>Dose:</i> 10 mg, 20 mg, or 40 mg vs. (adults) 125 mg to 500 mg <i>Frequency of administration:</i> Once daily vs. every 6 to 8 hours

Product name with potential for confusion	Similarity to Viibryd	Strength	Signa	Differentiating Product Characteristics (Viibryd vs. Product)
Viibryd (Vilazodone) Tablets	N/A	10 mg, 20 mg, and 40 mg	10mg orally once daily for 7 days, then 20 mg once daily for 7 days, then 40 mg once daily	N/A
Lubrin (Glycerin) Vaginal insert OTC Product	Look	No Strength	1 insert as needed	The downstroke letter “y” and ending upstroke letter “d” in Viibryd helps to differentiate the names. <i>Strength:</i> 10 mg, 20 mg, or 40 mg vs. no strength <i>Route of administration:</i> Oral vs. intravaginal <i>Frequency of administration:</i> Once daily vs. as needed
Lubrex Cream Skin cleanser OTC product	Look	No strength	Cream: Apply three times per day Skin Cleanser: Apply as needed	The ending letters in the names (“yd” vs. “ex”) do not look similar. <i>Strength:</i> 10 mg, 20 mg, or 40 mg vs. no strength <i>Frequency of administration:</i> Once daily vs. three times per day or as needed <i>Route of administration:</i> Oral vs. topical
Vpriv (Velaglucerase Alfa) for Injection	Sound	200 units and 400 units	60 units/kg intravenously over 60 minutes every other week	The second syllable in the names sounds different (“-bryd” vs. “-priv”). <i>Route of administration:</i> Oral vs. intravenous <i>Frequency of administration:</i> Once daily vs. every other week <i>Dosage form:</i> Tablets vs. for Injection

Appendix G: Risk of medication errors due to product confusion minimized by the reasons described

Proprietary Name: Viibryd (Vilazodone) Tablets	Strength: 10 mg, 20 mg, and 40 mg	Signa: 10mg orally once daily for 7 days, then 20 mg once daily for 7 days, then 40 mg once daily
Failure Mode: Name confusion	Causes (could be multiple)	Rationale
<p>Vibra-Tabs (Doxycycline Hyclate) Tablets</p> <p><i>Strength:</i> 100 mg</p> <p><i>Dosage:</i> 100 mg orally once daily or twice daily</p>	<p>Orthographic similarity: The beginning letter “V” is identical to both names. Additionally, the letters “br” are identical to both names.</p> <p>Phonetic similarity: The first two syllables (“Vi- bra”) in Vibra-Tabs may sound similar to the name “Vii-bryd”.</p> <p>A 100 mg dose of Vibra-Tabs is achievable using the 10 mg, 20 mg, and 40 mg strengths of Viibryd.</p> <p>There is a numerical overlap in dosage and tablet strength (e.g., 10 mg vs. 100 mg). The overlap could be exacerbated if a trailing zero (e.g., 10.0) is included with Viibryd 10 mg.</p> <p>Both products can be administered orally once daily.</p>	<p>Medication errors unlikely to occur due to orthographic differences between the names and product characteristic differences.</p> <p><i>Rationale:</i></p> <p>Viibryd contains the downstroke letter “y” whereas Vibra- Tabs does not contain a downstroke letter. Vibra-Tabs has three upstroke letters (“b”, “t”, and “b”) whereas Viibryd has two (“b” and “d”). These differences help to differentiate the names. Additionally, Vibra-Tabs is longer in length when scripted (9 letters) as compared to Viibryd (7 letters) which further helps to differentiate the name pair.</p> <p>Vibra-Tabs contains three syllables and the ending syllable does not sound similar to any of the two syllables in Viibryd which helps to differentiate the names.</p> <p>Although a 100 mg dose of Vibra-Tabs is achievable using Viibryd, such doses would require multiple Viibryd tablets which would likely be questioned by a healthcare professional before dispensing or administering the drug.</p> <p>Usual practice would not typically involve the inclusion of trailing zeros, although medication errors have been linked to this dangerous habit. Numerous campaigns (JCAHO, ISMP, and FDA) to eliminate use of trailing zeros when communicating drug information should help to further reduce risk of medication error.</p>

Proprietary Name: Viibryd (Vilazodone) Tablets	Strength: 10 mg, 20 mg, and 40 mg	Signa: 10mg orally once daily for 7 days, then 20 mg once daily for 7 days, then 40 mg once daily
Failure Mode: Name confusion	Causes (could be multiple)	Rationale
<p>Viread (Tenofovir Disoproxil Fumarate) Tablets</p> <p><i>Strength:</i> 300 mg</p> <p><i>Dosage:</i> 300 mg once daily</p> <p>For impaired renal function the frequency of administration is: every 48, 72, or 96 hours or once weekly</p>	<p>Orthographic similarity: Both names begin with the letters “Vi” and end with the letter “d”.</p> <p>Phonetic similarity: When Viread is pronounced with two syllables (“Vi-read”), the name may sound similar to Viibryd.</p> <p>There is a numerical overlap in potential dosage (e.g., 30 mg vs. 300 mg). The overlap could be exacerbated if a trailing zero (e.g., 30.0) is included with Viibryd 30 mg.</p> <p>Both products are administered orally once daily.</p>	<p>Medication errors unlikely to occur due to orthographic differences between the names and product characteristic differences.</p> <p><i>Rationale:</i></p> <p>The downstroke letter “y” and upstroke letter “b” in Viibryd may help to differentiate the names since Viread does not contain these downstroke and upstroke letters.</p> <p>Although a 300 mg dose of Viread is achievable using Viibryd, such doses would require multiple Viibryd tablets which would likely be questioned by a healthcare professional before dispensing or administering the drug.</p> <p>Usual practice would not typically involve the inclusion of trailing zeros, although medication errors have been linked to this dangerous habit. Numerous campaigns (JCAHO, ISMP, and FDA) to eliminate use of trailing zeros when communicating drug information should help to further reduce risk of medication errors.</p>
<p>Valtrex (Valacyclovir) Tablets</p> <p><i>Strength:</i> 500 mg and 1 g</p> <p><i>Dosage:</i> 500 mg or 1 g orally once daily, twice daily, three times per day, or every 48 hours</p>	<p>Orthographic similarity: Both names begin with the letter “V”. The letters “ii” in Viibryd may look similar to the letter “a” in Valtrex.</p> <p>The products have an overlapping oral route of administration and once daily frequency of administration.</p> <p>A 500 mg or 1 g dose of Valtrex is achievable using the proposed Viibryd strengths.</p>	<p>Medication errors unlikely to occur due to orthographic differences between the names and product characteristic differences.</p> <p><i>Rationale:</i></p> <p>The ending letters of the names (“yd” and “ex” do not look similar when scripted which may help to differentiate the names.</p> <p>The products have doses that differ [10 mg, 20 mg, or 40 mg vs. 500 mg and 1 g (1,000 mg)].</p> <p>Although a 500 mg or 1 g dose of Valtrex is achievable using Viibryd, such doses would require multiple Viibryd tablets which would likely be questioned by a healthcare professional before dispensing or administering the drug.</p>

Proprietary Name: Viibryd (Vilazodone) Tablets	Strength: 10 mg, 20 mg, and 40 mg	Signa: 10mg orally once daily for 7 days, then 20 mg once daily for 7 days, then 40 mg once daily
Failure Mode: Name confusion	Causes (could be multiple)	Rationale
<p>Nuvigil (Armodafinil) Tablets</p> <p><i>Strength:</i> 50 mg, 150 mg, 250 mg</p> <p><i>Dosage:</i> 150 mg or 250 mg orally once daily</p>	<p>Orthographic similarity: The beginning letters of the names may look similar when scripted ("Vii" vs. "Nu").</p> <p>The products have an overlapping oral route of administration and once daily frequency of administration.</p> <p>A 150 mg or 250 mg dose of Nuvigil is achievable using the proposed strengths of Viibryd.</p>	<p>Medication errors unlikely to occur due to orthographic differences between the names and product characteristic differences.</p> <p><i>Rationale:</i></p> <p>Viibryd contains two upstroke letters ("b" and "d") whereas Nuvigil has one ("l"). Additionally, the middle and ending letters of the names ("bryd" vs. "vigil") look different when scripted.</p> <p>The products have doses that differ (10 mg, 20 mg, or 40 mg, vs. 150 mg or 250 mg).</p> <p>Although a 150 mg or 250 mg dose of Nuvigil is achievable using Viibryd, such doses would require multiple Viibryd tablets which would likely be questioned by a healthcare professional before dispensing or administering the drug.</p>
<p>Valcyte (Valgancyclovir) Tablets Powder for oral solution</p> <p><i>Strength:</i> Tablets: 450 mg Powder for solution: 50 mg/mL</p> <p><i>Dosage:</i> 900 mg orally once daily or twice daily; 450 mg once daily, every two days, or twice per week</p>	<p>Orthographic similarity: The beginning letters are identical and the letters that follow ("ii" vs. "a") may look similar when scripted.</p> <p>The products have an overlapping oral route of administration and once daily frequency of administration.</p> <p>A 450 mg or 900 mg dose of Valcyte is achievable using the proposed strengths of Viibryd.</p>	<p>Medication errors unlikely to occur due to orthographic differences between the names and product characteristic differences.</p> <p><i>Rationale:</i></p> <p>The ending letters of the names ("d" vs. "te) look different when scripted.</p> <p>The products have doses that differ (10 mg, 20 mg, or 40 mg, vs. 450 mg or 900 mg).</p> <p>Although a 450 mg or 900 mg dose of Valcyte is achievable using Viibryd, such doses would require multiple Viibryd tablets which would likely be questioned by a healthcare professional before dispensing or administering the drug.</p> <p>Additionally, Valcyte is available in two dosage forms (tablets and powder for oral solution) so a prescription would likely give some indication as to whether the tablets or powder for oral solution is to be dispensed (i.e., state the dosage form or number of tablets or mL per dose).</p>

Proprietary Name: Viibryd (Vilazodone) Tablets	Strength: 10 mg, 20 mg, and 40 mg	Signa: 10mg orally once daily for 7 days, then 20 mg once daily for 7 days, then 40 mg once daily
Failure Mode: Name confusion	Causes (could be multiple)	Rationale
Vyvanse (Lisdexamphetamine Dimesylate) Capsules <i>Strength:</i> 20 mg, 30 mg, 40 mg, 50 mg, 60 mg, and 70 mg <i>Dosage:</i> 30 mg to 70 mg orally once daily	Phonetic similarity: Both names begin with syllables that sound identical “Vy-” vs. “Vii-” Both products share overlapping strengths, 20 mg and 40 mg. The doses of either product can be achieved with the available strengths of either product. Both products are solid oral dosage forms administered once daily.	Medication errors unlikely to occur due to phonetic differences between the names. <i>Rationale:</i> The second syllable in the names (“bryd” vs. “vanse”) does not sound similar which may help to differentiate the names phonetically.

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