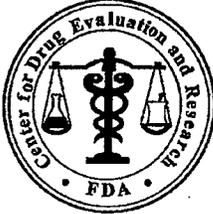


**CENTER FOR DRUG EVALUATION AND
RESEARCH**

APPLICATION NUMBER:

22-211

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**

Date: September 14, 2009

To: Wiley Chambers, M.D., Acting Director
Division of Anti-Infective and Ophthalmology Products

Through: Kellie Taylor, Pharm.D., M.P.H., Team Leader
Denise Toyer, Pharm.D., Deputy Director
Carol Holquist, R.Ph., Director
Division of Medication Error Prevention and Analysis

From: Tara Turner, Pharm.D., Safety Evaluator
Division of Medication Error Prevention and Analysis

Subject: Proprietary Name Review

Drug Name(s): Zirgan (Ganciclovir) Ophthalmic Gel 0.15%

Application Type/Number: NDA # 22-211

Applicant: Sirion Therapeutics

OSE RCM #: 2009-1588

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1 INTRODUCTION

This review is written in response to the anticipated approval of NDA # 22-211 within 90 days from the date of this review. DMEPA found the proposed name, Zirgan, acceptable in OSE Review #2009-564, dated May 28, 2009. Additionally, the Division of Drug Marketing, Advertising and Communications (DDMAC) found the name acceptable from a promotional perspective on September 8, 2009. Furthermore, the Review Division did not have any concerns with the proposed name, Zirgan, during our initial review.

2 METHODS

For the proposed proprietary name, DMEPA staff search a standard set of databases and information sources (see Section 4) to identify names with orthographic and/or phonetic similarity to the proposed name that have been approved since the previous OSE proprietary name review. We used the same search criteria outlined in OSE Review #2009-564 for the proposed proprietary name, Zirgan. None of Zirgan's product characteristics have been altered since the time of the last review. Thus, we did not re-evaluate previous names of concern. Additionally, DMEPA searches the USAN stem list to determine if the name contains any USAN stems as of the last USAN updates. DMEPA bases the overall risk assessment on the findings of a Failure Mode and Effects Analysis (FMEA) of the proposed proprietary name, and focuses on the avoidance of medication errors.

3 RESULTS

The searches of the databases yielded five new names (Zipsor, Firmagon, — **, Zomig and Lupron), thought to look similar to Zirgan and represent a potential source of drug name confusion. The findings of the FMEA indicate that the proposed name, Zirgan, is not likely to result in name confusion with any of the identified names for the reasons presented in Appendices A through C.

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Additionally, DMEPA staff did not identify any United States Adopted Names (USAN) stems in the proposed proprietary name, as of September 2, 2009.

4 CONCLUSIONS AND RECOMMENDATIONS

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

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 Anti-Infective and Ophthalmology Products should notify DMEPA because the proprietary name must be re-reviewed prior to the new approval date.

5 REFERENCES

1. Turner, Tara. OSE Review #2009-564: Proprietary Name Review for Zirgan. 28 May 2009.

2. **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.

3. **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.

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

USAN Stems List contains all the recognized USAN stems.

5. **Division of Medication Error Prevention and Analysis proprietary name 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.

APPENDICES

Appendix A: Proposed proprietary name that has never been marketed in the U.S.

Proprietary Name	Similarity to Zirgan	Description	Disposition of Name
_____	Look	(ziconotide) intrathecal infusion 25 mcg/mL (20 mL vial) 100 mcg/mL (1 mL and 5 mL vials) NDA # 21-060	Proposed name found unacceptable by DMEPA; product approved 12/28/2004 with tradename Prialt

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Appendix B: Single Strength Product with Differentiating Product Characteristics

Product name with potential for confusion	Similarity to Product Name	Strength	Usual Dose	Other Differentiating Product Characteristics
Zirgan (ganciclovir)		Ophthalmic gel 0.15%	One drop in the affected eyes 5 times per day (approximately every 3 hours while awake) until the corneal ulcer heals and then one drop 3 times per day for 7 days	
Zipsor (diclofenac potassium)	Look	Capsule : 25 mg	25 mg orally 4 times a day	Dosage form: Capsule vs. ophthalmic gel Dose: 25 mg vs. 1 drop Route of administration: Oral vs. ophthalmic Frequency of administration: 4 times per day vs. 5 times per day followed by 3 times per day

Appendix C: Products with no overlap in strength or dose

Product name with potential for confusion	Similarity to Proposed Proprietary Name	Strength	Usual Dose (if applicable)
Zirgan (ganefloxin)		Ophthalmic Gel; 0.15%	One drop in the affected eye 3 times per day (approximately every 3 hours while awake) until the corneal ulcer heals, and then one drop 3 times per day for 7 days
Firmagon (degarelix)	Look	Powder for injection : 80 mg per vial 120 mg per vial	Treatment is started with a dose of 240 mg given as two subcutaneous injections of 120 mg each. The starting dose is followed by maintenance doses of 80 mg administered as a single subcutaneous injection every 28 days
Zomig Zomig-ZMT (zolmitriptan)	Look	Zomig Tablets : 2.5 mg, 5 mg Nasal spray : 5 mg Zomig-ZMT Orally disintegrating tablets : 2.5 mg, 5 mg	Tablets: 2.5 mg at onset of headache; may repeat after 2 hours, not to exceed 10 mg within a 24-hour period Nasal Spray: administer one dose (5mg) at onset of headache; dose may be repeated after 2 hours; maximum daily dose should not exceed 10 mg in any 24-hour period Orally disintegrating tablets: 2.5 mg at onset of headache; may be repeated after 2 hours, not to exceed 10 mg within a 24-hour period
Lupron Lupron Depot Lupron Depot-3 Month Lupron Depot-4 Month Lupron Depot-Ped	Look	Lupron : 5mg/mL Lupron Depot : 3.75 mg, 7.5 mg Lupron Depot-3 Month : 11.25 mg, 22.5 mg	Advanced prostate cancer: Lupron 1 mg via subcutaneous injection daily Lupron Depot: 7.5 mg/dose given via intramuscular injection monthly

<p>(leuprolide acetate)</p>		<p>Lupron Depot-4 Month : 30 mg</p> <p>Lupron Depot-Ped : 7.5 mg, 11.25 mg, 15 mg</p>	<p>Lupron Depot-3: 22.5 mg via intramuscular injection every 3 months or</p> <p>Lupron Depot-4: 30 mg via intramuscular injection every 4 months</p> <p>Endometriosis:</p> <p>Lupron Depot: 3.75 mg/month via intramuscular injection for up to 6 months or</p> <p>Lupron Depot-3: 11.25 mg via intramuscular injection every 3 months for up to 2 doses (6 months total duration of treatment)</p> <p>Uterine leiomyomata (fibroids):</p> <p>Lupron Depot: 3.75 mg/month via intramuscular injection for up to 3 months or</p> <p>Lupron Depot-3: 11.25 mg as a single intramuscular injection</p> <p>Precocious puberty:</p> <p>Lupron 50 mcg/kg/day via subcutaneous injection</p> <p>Lupron Depot-Ped: 0.3 mg/kg/dose given every 28 days (minimum dose: 7.5 mg)</p>
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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/

TARA P TURNER
09/14/2009

KELLIE A TAYLOR
09/15/2009

DENISE P TOYER
09/16/2009

DENISE P TOYER on behalf of CAROL A HOLQUIST
09/16/2009

**Food and Drug Administration
Center for Drug Evaluation and Research
Division of Drug Marketing, Advertising, and Communications**

Memorandum

*****Pre-Decisional Agency Information*****

Date: August 12, 2009

To: Lori Gorski
Regulatory Health Project Manager
Division of Anti-Infective and Ophthalmology Products

From: Beth Carr, Pharm.D., Regulatory Review Officer
Lynn Panholzer, Pharm.D., Regulatory Review Officer
Division of Drug Marketing, Advertising, and Communications
(DDMAC)

Subject: Zirgan (ganciclovir ophthalmic gel) 0.15%
NDA: 22-211

DDMAC has reviewed the proposed product labeling, including the package insert (PI), draft carton label, and draft container label for Zirgan (ganciclovir ophthalmic gel) 0.15% (Zirgan) submitted by Lori Gorski via DARRTS on July 31, 2009; and we offer the following comments. Feel free to contact me at (301) 796-3674 with any questions or points of clarification.

Package Insert

FULL PRESCRIBING INFORMATION

2 DOSAGE AND ADMINISTRATION

Please consider adding more elaboration on what defines a corneal ulcer as healed.

6 ADVERSE REACTIONS

In accordance with the January 2006 Guidance for Industry: Adverse Reactions Section of the Label for Human Prescription Drugs and Biologics – Content and Format, please include the following:

- Please include an adequate description of the data sources for the adverse event data, as outlined in the guidance. For example, please include information on whether the trials were double blinded, randomized,

and placebo controlled trials, if available. Also, please include the dosage, frequency, and duration of therapy that patients received.

- Identify adverse reactions, if any, that resulted in a significant rate of discontinuation or other clinical intervention (e.g., dosage adjustment, need for other therapy to treat an adverse reaction) in clinical trials.

14 CLINICAL STUDIES

The description of the clinical studies is vague and may be used by the sponsor to promote in a misleading manner. We suggest rewriting this section with the following information: number of patients studied in each arm of the trial(s), age ranges of the patients, major study endpoints, descriptions of the measurement tools used to evaluate the outcomes (the measurable signs of clinical resolution), actual results in tabular format, and any appropriate accompanying statistics.

Specifically, please provide more information on the definition of clinical resolution (healed ulcers). Please be aware that there have been promotional issues with sponsors using a different definition of "clinical resolution" than the FDA used for analysis of results.

17 PATIENT COUNSELING INFORMATION

Please consider adding the information that patients should not wear contact lenses **if they have signs or symptoms of herpetic keratitis** or during the course of therapy with Zirgan.

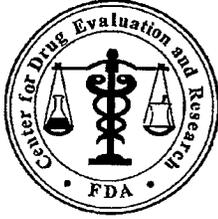
Draft Carton Label, Draft Container Label

We note that the draft carton label contains an image of what appears to be a _____ above the trade name. Although DDMAC is not sure what representation this image is making, please note that the carton label should not contain any representation of the disease that the drug is approved to treat.

b(4)

Beth M. Carr

Beth M Carr 08/13/09



**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: May 28, 2009

To: Wiley Chambers, M.D., Acting Director
Division of Anti-Infective and Ophthalmology Products (DAIOP)

Through: Kellie Taylor, Pharm.D., M.P.H., Team Leader
Denise Toyer, Pharm.D., Deputy Director
Carol Holquist, RPh, Director
Division of Medication Error Prevention and Analysis (DMEPA)

From: Tara Turner, Pharm.D., Safety Evaluator
Division of Medication Error Prevention and Analysis (DMEPA)

Subject: Proprietary Name Review

Drug Name(s): Zirgan
(Ganciclovir) Ophthalmic Gel 0.15%

Application Type/Number: NDA # 22-211

Applicant: Sirion Therapeutics

OSE RCM #: 2009-564

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

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EXECUTIVE SUMMARY

Zirgan is the proposed proprietary name for Ganciclovir Ophthalmic Gel. The proposed name was evaluated from both a safety and promotional perspective considering the advice of the various review disciplines involved with the review of this Application. We also considered the findings of an independent analysis of the proposed proprietary name submitted by the Applicant. Overall, our evaluation did not identify concerns that would render the name unacceptable based on the proposed product characteristics and safety profile known at the time of this review.

Thus, the Division of Medication Error Prevention and Analysis (DMEPA) finds the proposed proprietary name, Zirgan, conditionally acceptable for this product. The proposed name must be re-reviewed if an approval action occurs later than September 17, 2009. Additionally, if any of the proposed product characteristics as stated in this review are altered prior to approval of the product, DMEPA rescinds this finding and the name must be resubmitted for review. The conclusions on re-review of the name are subject to change.

1 BACKGROUND

1.1 INTRODUCTION

This review was written in response to a request from Sirion Therapeutics dated March 19, 2009 for the proprietary name review of proposed name, Zirgan, for potential name confusion with other proprietary or established drug names in the usual practice settings. The Applicant also submitted draft container labels, carton and insert labeling, which will be reviewed in a separate DMEPA review (see OSE RCM# 2009-571).

1.2 REGULATORY HISTORY

The Division of Medication Error Prevention and Analysis objected to the Applicant's primary name, Virgan (see OSE Review #2007-1171, dated June 14, 2007) due to potential orthographic and phonetic confusion with Veregen, an approved drug product in the U.S. Subsequently, DMEPA objected to the Applicant's second and third name choices, _____, due to the inclusion of the USAN stems -vir and -vir-, respectively, as well as potential orthographic confusion between _____ and Denavir and between _____ and Zovirax (see OSE Review # 2008-1300/2008-1302, dated April 6, 2009). Zirgan is the Applicant's fourth name choice.

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1.3 PRODUCT INFORMATION

Zirgan (ganciclovir) is indicated for the treatment of acute herpetic keratitis (dendritic and geographic ulcers). It is available as an ophthalmic gel in a single strength of 0.15%. The recommended dosing regimen is one drop in the affected eye 5 times per day (approximately every 3 hours while awake) until the corneal ulcer heals, and then one drop 3 times per day for 7 days. The product is packaged as a 1 gram polyfoil tube (professional sample) and a 5 gram polyfoil tube (commercial).

2 METHODS AND MATERIALS

This section describes the methods and materials used by the Division of Medication Error Prevention and Analysis (DMEPA) when conducting a proprietary name risk assessment (See 2.1 Proprietary Name Risk Assessment). The primary objective for the assessment is to identify and remedy potential sources of medication error prior to drug approval. 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

2.1 PROPRIETARY NAME RISK ASSESSMENT

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.

For the proposed proprietary name, DMEPA staff searched a standard set of databases and information sources to identify names with orthographic and phonetic similarity (See 2.1.1 for details) and held a Center for Drug Evaluation and Research (CDER) Expert Panel discussion to gather professional opinions on the safety of the proposed proprietary name (See 2.1.1.2). DMEPA staff also conducts internal CDER prescription analysis studies. When provided, external prescription analysis studies results are considered and incorporated 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 (See 2.1.2 for details). The overall risk assessment is based on the findings of a Failure Mode and Effects Analysis (FMEA) of the proprietary name, and is focused on the avoidance of medication errors.

FMEA is a systematic tool for evaluating a process and identifying where and how it might fail.² FMEA is used 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

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.

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

2.1.1 Search Criteria

The DMEPA staff considers the spelling of the name, pronunciation of the name when spoken, and appearance of the name when scripted as outlined in Appendix A.

For this review, particular consideration was given to drug names beginning with the letter 'Z' 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.^{4,5}

To identify drug names that may look similar to Zirgan, the DMEPA staff also considers the orthographic appearance of the name on lined and unlined orders. Specific attributes taken into consideration include the length of the name (six letters), upstrokes (one: capital letter 'Z'), downstrokes (one: lower case 'g'), cross-strokes (one: capital letter 'Z') and dotted letters (one, lower case 'i'). Additionally, several letters in Zirgan may be vulnerable to ambiguity when scripted, including the capital letter 'Z' may appear as a capital letter 'L', 'F', or 'T'; lower case 'i' may appear as a lower case 'e'; lower case 'r' may appear as a lower case 'n', 'v', or 'x'; lower case 'g' may appear as a lower case 'q', 'j', or 'p'; lower case 'a' may appear as a lower case 'c', 'o', or 'u'; lower case 'n' may appear as a lower case 'u', 'v', 'h', 's', 'r', or 'x'. As a result, the DMEPA staff also considers these alternate appearances when identifying drug names that may look similar to Zirgan.

When searching to identify potential names that may sound similar to Zirgan, the DMEPA staff searches for names with similar number of syllables (2), stresses (ZIR-gan or zir-GAN), and placement of vowel and consonant sounds. Additionally, the DMEPA staff considers that pronunciation of parts of the name can vary such as the letter 'Z' may be interpreted as 's' or 'x'; the letter 'i' may be interpreted as 'e'; the letter 'a' may be interpreted as 'u'; or the letter 'g' may be interpreted as 'j'. The Applicant's intended pronunciation of the proprietary name is presented as (zeer-gan). However, names are often mispronounced and/or spoken with regional accents and dialects, so other potential pronunciations of the name are considered.

The DMEPA staff also considers the product characteristics associated with the proposed drug throughout the identification of similar drug names, since the product characteristics of the proposed drug ultimately determine the use of the product in the clinical practice setting. For this review, the following information was provided about the proposed product to the medication error staff: proposed proprietary name (Zirgan), established name (ganciclovir), proposed indication of use (treatment of acute herpetic keratitis), strength (0.15%), dose/frequency of administration (1 drop in the affected eye 5 times per day, approximately every 3 hours while awake, until the corneal ulcer heals, and then 1 drop 3 times per day for 7 days), route (ophthalmic), and dosage form (ophthalmic gel). Appendix A provides a more detailed listing of the product characteristics the medication error staff generally takes into consideration.

Lastly, the DMEPA staff also considers the potential for the proposed 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, these broader safety implications of the name are considered and evaluated throughout this

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

⁴ Institute for Safe Medication Practices. Confused Drug name List (1996-2006). Available at <http://www.ismp.org/Tools/confuseddrugnames.pdf>

⁵ Kondrack, G and Dorr, B. Automatic Identification of Confusable Drug Names. Artificial Intelligence in Medicine (2005)

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.

2.1.1.1 Database and Information Sources

The proposed proprietary name was provided to the DMEPA staff to conduct a search 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 2.1.1. A standard description of the databases used in the searches is provided in Section 7. To complement the process, the medication error staff used 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 reviewed the USAN stem list to determine if any USAN stems are present within the proprietary name. The individual findings of multiple safety evaluators were then pooled and presented to the CDER Expert Panel.

2.1.1.2 CDER Expert Panel Discussion

An Expert Panel Discussion is held by DMEPA 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 Error Prevention and Analysis (DMEPA) staff and representatives from the Division of Drug Marketing, Advertising, and Communications (DDMAC). Potential concerns regarding drug marketing and promotion related to the proposed names are also discussed.

The pooled results of the DMEPA staff were presented 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 Safety Evaluator to supplement the pooled results, or general advice to consider when reviewing the proposed proprietary name.

2.1.2 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 a total of 123 (one hundred twenty-three) healthcare professionals (pharmacists, physicians, and nurses), and attempts to simulate the prescription ordering process. The results are used by the Safety Evaluator to identify any 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.

Figure 1. Zirgan Study (conducted on April 28, 2009)

HANDWRITTEN PRESCRIPTION AND MEDICATION ORDER	VERBAL PRESCRIPTION
<p><u>Inpatient Medication Order:</u></p> <p><i>Zirgan 1 gtt in the affected eye 5 times per day (approximately every 3 hrs while awake) until the corneal ulcer heals; then 1 gtt TID for 7 days.</i></p>	<p>"Zirgan #1 tube 1 drop in the affected eye 5 times per day (approximately every 3 hours while awake) until the corneal ulcer heals; then 1 drop 3 times per day for 7 days"</p>
<p><u>Outpatient Prescription:</u></p> <p><i>Zirgan #1 tube 1 drop in the affected eye 5 times per day (approximately every 3 hrs while awake) until the corneal ulcer heals; then 1 drop 3 times per day for 7 days. Dr. Oll</i></p>	

2.1.3 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 assessment of 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 Sponsor. 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.

2.1.4 Comments from the Division of Anti-Infective and Ophthalmology Products

DMEPA requests the regulatory division in the Office of New Drugs 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. Any comments or concerns are addressed in the safety evaluator's assessment.

The 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 regulatory division is requested to concur /not concur with DMEPA's final decision.

2.1.5 Safety Evaluator Risk Assessment of the Proposed Proprietary Name

Based on the criteria set forth in Section 2.1, the Safety Evaluator Risk Assessment applies his/her individual expertise gained from evaluating medication errors reported to FDA to conduct 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 as a result of the 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 Safety Evaluator must analyze the use of the product at all points in the medication use system. Because the proposed product is not yet marketed, the Safety Evaluator anticipates the use of the product in the usual practice settings by considering the clinical and product characteristics listed in Appendix A. 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 evaluation, and studies, and identifies potential failure modes by asking:

“Is the name Zirgan 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 Zirgan 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, then the name is eliminated from further review.

In the second stage of the Risk Assessment, all potential failure modes are evaluated 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?”

⁶ Institute for Healthcare Improvement (IHI). Failure Modes and Effects Analysis. Boston. IHI:2004.

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 name is eliminated 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 that an alternate proprietary name be used. In rare instances, the FMEA findings may provide other risk-reduction strategies; for example, product reformulation to avoid an overlap in strength or an alternate modifier designation may be recommended as a means of reducing the risk of medication errors resulting from drug name confusion.

DMEPA will object to the use of proposed proprietary name when one or more of the following conditions are identified in the Safety Evaluator's Risk Assessment:

1. 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)].
2. 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)].
3. FMEA identifies potential for confusion between the proposed proprietary name and other proprietary or established drug names, and demonstrates that medication errors are likely to result from the drug name confusion under the conditions of usual clinical practice.
4. The proposed proprietary name contains an USAN (United States Adopted Names) stem, particularly in a manner that is contradictory to the USAN Council's definition.
5. 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.

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 is awarded approval first has the right to use the name, while DMEPA will recommend that the second product to reach approval seek an alternative name.

If none of these criteria are met, then DMEPA will not object to the use of the proprietary name. If any of these criteria are met, then DMEPA will object to the use of the proposed proprietary 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 1 through 5 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), who have examined medication errors resulting from look- or sound-alike drug names and called for regulatory authorities to address the issue prior to approval.

Furthermore, 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, can be identified and remedied prior to approval to avoid patient harm.

Additionally, post-marketing experience has demonstrated that medication errors resulting from drug name confusion are notoriously difficult to remedy post-approval. Educational efforts and other post-approval efforts are low-leverage strategies that have proven to have limited effectiveness at alleviating medication errors involving drug name confusion. Higher-leverage strategies, such as drug name changes, have been undertaken 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 FMEA process is used 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.

3 RESULTS

3.1 PROPRIETARY NAME RISK ASSESSMENT

3.1.1 Database and Information Sources

The searches yielded a total of twenty names as having some similarity to the name Zirgan.

Fourteen of the names were thought to look like Zirgan (Mirpan, Lumigan, Tigan, Largon, ~~_____~~***, Zargus, Ziradryl, Xergic, Fergon, Ziagen, Zicam, Niravam, Mirapex, and Zymar). One name, Zerdin, was thought to sound like Zirgan. The remaining five names (Zingo, Surgam, ~~_____~~, Virgan***, and Zagam) were thought to look and sound similar to Zirgan.

b(4)

Our searches also revealed that the proposed name, Zirgan, is trademarked in the U.S. by another firm, Laboratoires Thea SAS, for ophthalmic preparations.

Additionally, DMEPA staff did not identify any United States Adopted Names (USAN) stems in the proposed proprietary name, as of April 9, 2009.

3.1.2 Expert Panel Discussion

The Expert Panel reviewed the pool of names identified by DMEPA staff (See Section 3.1.1. above) and noted no additional names thought to have orthographic or phonetic similarity to Zirgan.

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

3.1.3 FDA Prescription Analysis Studies

For the study conducted on April 28, 2009, a total of 21 practitioners responded but none of the responses overlapped with any existing or proposed drug names. Fifteen of the participants interpreted the drug name correctly as "Zirgan", with correct interpretation occurring in both the inpatient and outpatient written studies. The remainder of participants misinterpreted the drug name. All of the participants in the verbal study misinterpreted the drug name as beginning with the letter 'S'. The majority of

misinterpretations in the written studies involved the misinterpretation of the letters 'F' or 'T' for 'Z' (Firgan, Frigan, or Trigan). See Appendix B for the complete listing of interpretations from the verbal and written prescription studies.

3.1.4 External Proprietary Name Risk Assessment

In the proposed name risk assessment submitted by the Applicant, the Drug Safety Institute (DSI)/Brand Institute identified and evaluated a total of 17 drug names and one medical term thought to have some potential for confusion with the name Zirgan. As part of its process, DSI utilized an Internal Expert Panel Discussion, Prescription Studies, and External Studies (sound-alike, look-alike, and medical term similarity) to identify names that look or sound similar to Zirgan.

Seven of the 17 names were not previously identified in the DMEPA staff searches, the Expert Panel Discussion, or FDA prescription studies. Four names (Phenergan, Questran, Reglan, and Zelnorm) were identified to have sound-alike similarity to Zirgan. Three names (Dalgan, Zyrtec, and Reglan) were identified to have look-alike and sound-alike similarity. Additionally, the medical term, "surgeon", was identified as having similarity with Zirgan.

The Drug Safety Institute/Brand Institute found the name, Zirgan, acceptable.

3.1.5 Comments from the Division of Anti-Infective and Ophthalmology Products (DAIOP)

DMEPA notified DAIOP via e-mail that we had no objections to the proposed proprietary name, Zirgan, on May 14, 2009. Per e-mail correspondence from DAIOP on May 14, 2009, they indicated that they concur with our assessment.

3.1.6 Safety Evaluator Risk Assessment

Consideration was given to comments received from DDMAC and the review division, as well as the external study. Independent searches by the primary Safety Evaluator resulted in fourteen additional names which were thought to look or sound similar to Zirgan and represent a potential source of drug name confusion.

Twelve names were identified to have look-alike similarities (Zegerid, _____, Zirpine, Zirconia, Zincon, Zofran, Zonegran, Zyban, Ziana, Zipan, and Veregen). One name, Zorcaine, was identified to have sound-alike similarities. The remaining name, Z-gen, was identified to have look-alike and sound-alike similarities. b(4)

As such, a total of forty-one names were analyzed to determine if the drug names could be confused with Zirgan and if the drug name confusion would likely result in a medication error. Additionally, one medical term was analyzed as a potential source of confusion.

The medical term, surgeon, is defined as a physician who treats disease, injury, and deformity by operation or manipulation. This term is not typically used in prescribing and dispensing medications.

Eleven names lacked orthographic and/or phonetic similarity and were not evaluated further (see Appendix C).

Failure mode and effects analysis (FMEA) was then applied to determine if the proposed name, Zirgan, could potentially be confused with any of the thirty remaining names and lead to medication errors. This analysis determined that the name similarity between Zirgan and the identified names was unlikely to result in medication errors with any of the thirty products identified for the reasons presented in Appendices D through M.

4 DISCUSSION

4.1 PROPRIETARY NAME RISK ASSESSMENT

One medical term and forty-one names were evaluated for their potential similarity to the proposed name, Zirgan. The FMEA indicates that the proposed name is not likely to result in name confusion that could lead to medication errors. This finding is consistent with and supported by an independent risk assessment of the proprietary name submitted by the Applicant. Neither DDMAC nor the Division had concerns with the proposed name.

5 CONCLUSIONS AND RECOMMENDATIONS

The Proprietary Name Risk Assessment findings indicate that the proposed name, Zirgan, is not 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, Zirgan, for this product at this time. Additionally, DDMAC does not object to the proposed name, Zirgan, from a promotional perspective.

However, if any of the proposed product characteristics as stated in this review are altered prior to approval of the 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 resubmitted for evaluation.

5.1 COMMENTS TO THE DIVISION

Zirgan will require re-review if the approval action occurs later than September 17, 2009. We are willing to meet with the Division for further discussion, if needed. If you have further questions or need clarifications, please contact Darrell Jenkins, project manager, at 301-796-0558.

5.2 COMMENTS TO THE APPLICANT

5.2.1 *Proprietary Name*

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

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; contains monographs on prescription and OTC drugs, with charts comparing similar products.

4. ***AMF Decision Support System [DSS]***

DSS is a government database used to track individual submissions and assignments in review divisions.

5. ***Division of Medication Error 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 and generic drugs and therapeutic biological products; prescription and over-the-counter human drugs and therapeutic biologicals, 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 tradenames 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/ama1/pub/upload/mm/365/stem-list-2-09-update.pdf>)

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:

The medication error staff 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 names 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. The medication error 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 medication error 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), along with other orthographic attributes that determine the overall appearance of the drug name when scripted (See Table 1 below for details). In addition, the medication error 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	<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 Downstrokes Cross-strokes	<ul style="list-style-type: none"> Names may look similar when scripted, and lead to drug name confusion in written communication

		Dotted letters Ambiguity introduced by scripting letters Overlapping product characteristics	
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

Appendix B: Zirgan Prescription Study Responses

Inpatient Medication Order	Voice Prescription	Outpatient Prescription
Firgan	Sergan	Zirgan
Firgan	Syrgan	Zirgan
Trigan		Zirgan
Zirgan		

Appendix C: Names lacking convincing look-alike or sound-alike similarities with Zirgan

Proprietary Name	Similarity to Zirgan	Source
Ziradryl	Look	EPD
Xergic	Look	EPD
Niravam	Look	EPD
Mirapex	Look	EPD
Dalgan	Look and Sound	DSI
Xibrom	Sound	DSI
Zyrtec	Look and Sound	DSI
Phenergan	Sound	DSI
Questran	Sound	DSI
Reglan	Look and Sound	DSI
Zelnorm	Sound	DSI

Appendix D: Proprietary names used only in Foreign Countries

Proprietary Name	Similarity to Zirgan	Country	Description
Mirpan	Look	Germany	Maprotiline (no longer marketed)
Zargus	Look	Brazil	Risperidone
Zirpine	Look	Ireland	Cetirizine hydrochloride
Zirconia	Look	Mexico	Acyclovir
Surgam	Look/Sound	Multiple	Tiaprofenic acid
	Look/Sound	Taiwan	Butenafine
Zerdin	Sound	Philippines	Ranitidine

b(4)

Appendix E: Discontinued products (no generics available)

Proprietary Name	Similarity to Zirgan	Description	Date discontinued
Largon	Look	(Propiomazine hydrochloride) injection; 20 mg/mL	No information
Zagam	Look/Sound	(Sparfloxacin) tablets; 200 mg	April 4, 2005 (per DSS)

Appendix F: Proprietary name of discontinued branded generic, established name is primarily used in standard practice

Proprietary Name	Similarity to Zirgan	Description
Zipan (product line)	Look	Promethazine hydrochloride injection Zipan-25: 25 mg/mL Zipan-50: 50 mg/mL

Appendix G: Proposed proprietary name that has never been marketed in the U.S.

Proprietary Name	Similarity to Zirgan	Description	Disposition of Name
Virgan***	Look/Sound	(Ganciclovir) ophthalmic gel; 0.15% IND # 75,762	First proposed name submitted for subject application; proposed name found unacceptable by DMEPA; product is marketed under this name in several foreign countries

Appendix H: Natural Medicine Product

Proprietary Name	Similarity to Zirgan	Description	Use
—	Look	Calendula	Multiple (oral and topical)

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Appendix I: Products with no overlap in strength or dose

<p>Zirgan (ganciclovir)</p>		<p>Ophthalmic gel: 0.15%</p>	<p>One drop in the affected eye 5 times per day (approximately every 3 hours while awake) until the corneal ulcer heals, and then 1 drop 3 times per day for 7 days</p>
<p>Product name with potential for confusion</p>	<p>Similarity to Proposed Proprietary Name</p>	<p>Strength</p>	<p>Usual Dose (if applicable)</p>
<p>Tigan (trimethobenzamide HCl)</p>	<p>Look</p>	<p>Capsules: 300 mg Injection: 100 mg/mL (single-dose vials – 2 mL; multi-dose vials – 20 mL) Suppositories (all brand and generic products removed from the market by FDA in 2007): 200 mg (adult strength, 100 mg (pediatric strength))</p>	<p>Capsules: 300 mg orally three or four times daily Injection: 200 mg intramuscularly three or four times daily Suppositories: 200 mg per rectum 3 to 4 times per day as needed</p>
<p>Zegerid (omeprazole and sodium bicarbonate)</p>	<p>Look</p>	<p>Capsules: Omeprazole 20 mg/sodium bicarbonate 1100mg Omeprazole 40 mg/sodium bicarbonate 1100 mg Powder for Suspension: Omeprazole 20 mg/sodium bicarbonate 1680 mg Omeprazole 40 mg/sodium bicarbonate 1680 mg</p>	<p>Short-Term Treatment of Active Duodenal Ulcer: 20 mg once daily for 4 weeks Benign Gastric Ulcer: 40 mg once daily for 4-8 weeks Gastroesophageal Reflux Disease Symptomatic GERD (with no esophageal erosions): 20 mg once daily for up to 4 weeks Erosive Esophagitis: 20 mg once daily for 4-8 weeks Maintenance of Healing of Erosive Esophagitis: 20 mg once daily Reduction of Risk of Upper Gastrointestinal Bleeding in Critically Ill Patients: (40 mg oral suspension only) 40 mg initially followed by 40 mg 6-8 hours later and 40 mg daily thereafter for 14 days</p>

<p>Zofran (ondansetron)</p>	<p>Look</p>	<p>Tablets: 4 mg, 8 mg Orally Disintegrating Tablets: 4 mg, 8 mg Oral Solution: 4 mg/5 mL Injection: 4 mg/2 mL single dose vial 40 mg/20 mL multi-dose vial 32 mg/50 mL in 5% dextrose</p>	<p>Oral: 24 mg administered 30 minutes before the start of single-day highly emetogenic chemotherapy; 8 mg administered twice a day for moderately emetogenic chemotherapy; 8 mg administered three times a day for radiotherapy; 16 mg administered 1 hour before induction of anesthesia</p> <p>Injectable: a single 32 mg dose or three 0.15 mg/kg doses for prevention of chemotherapy induced nausea and vomiting; 4 mg administered intravenously immediately before induction of anesthesia or postoperatively; alternatively 4 mg may be administered intramuscularly as a single injection</p>
<p>Zonegran (zonisamide)</p>	<p>Look</p>	<p>Capsules: 25 mg, 50 mg, 100 mg</p>	<p>The initial dose of Zonegran should be 100 mg daily. After two weeks, the dose may be increased to 200 mg/day for at least two weeks.</p> <p>It can be increased to 300 mg/day and 400 mg/day, with the dose stable for at least two weeks to achieve steady state at each level.</p> <p>Zonegran should be administered once or twice daily, using 25 mg, 50 mg or 100 mg capsules.</p>

Zicam product line (OTC)	Look	<p>Homeopathic Remedies:</p> <p>Cold Remedy Gel Swabs (zincum gluconicum)</p> <p>Cold Remedy Nasal Gel (zincum gluconicum)</p> <p>Cold Remedy Rapid Melts (zincum aceticum, zincum gluconicum, vitamin C, Echinacea)</p> <p>Cold Remedy Chewables (zincum aceticum and zincum gluconicum)</p> <p>Cold Remedy ChewCaps (zincum aceticum and zincum gluconicum)</p> <p>Allergy Relief Gel Swabs (Luffa Operculata, Galphimia Glauca, Histaminum Hydrochloricum, and Sulphur)</p> <p>Cold Sore Gel Swabs (zincum aceticum 2x and zincum gluconicum 2x)</p> <p>Dietary Supplement:</p> <p>Healthy Z-ssentials (zinc, vitamin C, vitamin B6, vitamin B12, green tea extract, grapeseed extract, Echinacea)</p> <p>Allergy and Cold Relief:</p> <p>Multi-Symptom Cold & Flu To Go- Daytime (acetaminophen 650 mg, chlorpheniramine maleate 4 mg, dextromethorphan HBr 20 mg, phenylephrine HCL 10 mg – available in a dose spoon)</p> <p>Multi-Symptom Cold & Flu To Go – Nighttime (acetaminophen, dextromethorphan HBr, doxylamine succinate, phenylephrine HCL – available in a dose spoon)</p> <p>Cough MAX Cough Spray (dextromethorphan HBr 6 mg)</p> <p>Cough MAX Cough Melts (dextromethorphan HBr 30 mg)</p>	As directed on package
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Appendix J: Single Strength Products with Differentiating Product Characteristics

Product name with potential for confusion	Similarity to Product Name	Strength	Usual Dose	Other Differentiating Product Characteristics
Zirgan (ganciclovir)		Ophthalmic gel: 0.15%	One drop in the affected eye 5 times per day (approximately every 3 hours while awake) until the corneal ulcer heals, and then 1 drop 3 times per day for 7 days	
(4)				
Fergon (ferrous gluconate)	Look	Tablets: 225 mg (elemental iron 27 mg)	Iron-deficiency anemia: 150 to 300 mg of elemental iron per day given in 2 to 3 divided doses (e.g., 50 to 100 mg of elemental iron three times daily)	Dosage form: Tablet vs. ophthalmic gel Route of administration: Oral vs. ophthalmic Dose: 50 mg to 100 mg vs. 1 drop Availability: Over the counter vs. prescription
Zincon (pyrithione zinc)	Look	Shampoo: 1%	Wet hair; apply to scalp and massage vigorously; rinse and repeat; for best results use at least twice a week or as directed by a doctor	Dosage form: Shampoo vs. ophthalmic gel Route of administration: Topical (scalp) vs. ophthalmic Frequency of administration: Use at least twice a week vs. 5 times daily Availability: Over the counter vs. prescription

<p>Zyban (bupropion hydrochloride)</p>	<p>Look</p>	<p>Sustained release tablets: 150 mg</p>	<p>The recommended and maximum dose of Zyban is 300 mg/day, given as 150 mg twice daily. Dosing should begin at 150 mg/day given every day for the first 3 days, followed by a dose increase for most patients to the recommended usual dose of 300 mg/day.</p>	<p><u>Dosage form:</u> Tablet vs. ophthalmic gel <u>Route of administration:</u> Oral vs. ophthalmic <u>Frequency of administration:</u> Twice daily vs. 5 times daily</p>
<p>Ziana (clindamycin phosphate and tretinoin)</p>	<p>Look</p>	<p>Gel : Clindamycin phosphate 1.2% and tretinoin 0.025%</p>	<p>Apply a pea-sized amount to the entire face once daily at bedtime. Do not apply to eyes, mouth, angles of the nose, or mucous membranes.</p>	<p><u>Dosage form:</u> Topical gel vs. ophthalmic gel <u>Route of administration:</u> Topical vs. ophthalmic <u>Dose:</u> Pea-sized amount vs. 1 drop <u>Frequency of administration:</u> Once daily at bedtime vs. 5 times daily</p>
<p>Zingo (lidocaine hydrochloride monohydrate)</p>	<p>Look/Sound</p>	<p>Powder Intradermal Injection System: 0.5 mg</p>	<p>Apply one Zingo (0.5 mg lidocaine hydrochloride monohydrate) to the site planned for venipuncture or intravenous cannulation, one to three minutes prior to needle insertion.</p> <p>Perform the procedure within 10 minutes after Zingo administration.</p> <p>Use Zingo only on intact skin.</p> <p>Application of one additional Zingo at a new location is acceptable after a failed attempt at venous access. Multiple administrations of Zingo at the same location are not recommended.</p>	<p><u>Dosage form:</u> Powder intradermal injection system vs. ophthalmic gel <u>Route of administration:</u> Intradermal vs. ophthalmic <u>Dose:</u> 0.5 mg vs. 1 drop <u>Frequency of administration:</u> One time before procedure vs. 5 times daily</p>
<p>Z-Gen (vitamin B complex, vitamin C, vitamin E, zinc)</p>	<p>Look/Sound</p>	<p>Tablets</p>	<p>One tablet once daily</p>	<p><u>Dosage form:</u> Tablet vs. ophthalmic gel <u>Route of administration:</u> Oral vs. Ophthalmic <u>Frequency of administration:</u> Once daily vs. 5 times daily <u>Availability:</u> Over the counter vs. prescription</p>

Zorcaline (articaine hydrochloride and epinephrine bitartrate)	Sound	Solution for injection: articaine hydrochloride 4% and epinephrine bitartrate 1:100,000	Infiltration: Injection volume of 4% solution: 0.5-2.5 mL; total dose: 20-100 mg Nerve block: Injection volume of 4% solution: 0.5-3.4 mL; total dose: 20-136 mg Oral surgery: Injection volume of 4% solution: 1-5.1 mL; total dose: 40-204 mg	Dosage form: Solution for injection vs. ophthalmic gel Route of administration: Submucosal injection and/or nerve block vs. ophthalmic Dose: 0.5 to 5.1 mL vs. 1 drop Frequency of administration: One time before procedure vs. 5 times daily Setting of use: Dental procedures vs. outpatient
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Appendix K: Single strength products with overlapping route

Failure Mode: Name confusion	Causes (could be multiple)	Effects
Zirgan (ganciclovir)	Ophthalmic gel: 0.15%	One drop in the affected eye 5 times per day (approximately every 3 hours while awake) until the corneal ulcer heals, and then 1 drop 3 times per day for 7 days
Lumigan (bimatoprost) ophthalmic solution 0.03% One drop in the affected eye(s) once daily in the evening	Orthographic similarity Single strength Overlapping route	The orthographic differences in the names help to distinguish between them. Although the beginning letters may look similar when scripted ('Lu' vs. Zir') and the names share the same ending letters ('gan'), the letters 'mi' in the middle of Lumigan cause that name to appear longer when scripted. The risk of medication errors is further reduced by the fact that these products have different dosage regimens. Lumigan is dosed once daily in the evening for a chronic eye disease. In contrast, due to the complexity of the dosing instructions for Zirgan, prescriptions will likely be written "Use as directed". Zirgan is indicated for treatment of a viral eye infection and therefore the treatment duration is limited.

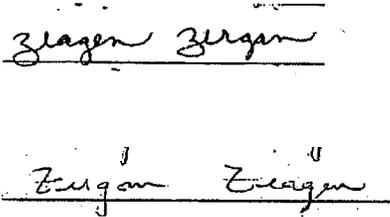
b(4)

<p>Zymar (gatifloxacin) ophthalmic solution 0.3%</p> <p>Days 1 and 2: Instill one drop every two hours in the affected eye(s) while awake, up to 8 times daily.</p> <p>Days 3 through 7: Instill one drop up to four times daily while awake.</p>	<p>Orthographic similarity</p> <p>Single strength</p> <p>Overlapping route</p>	<p>The risk of medication errors is reduced by the orthographic differences in the names. Although the names share the beginning letter 'Z' and the ending letters may look similar when scripted ('ar' vs. 'an'), the downstrokes ('y' vs. 'g') have different locations, which causes the middle segments of the names to look dissimilar.</p>
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Appendix L: Product with numerical overlap in strength

Failure Mode: Name confusion	Causes (could be multiple)	Effects
<p>Zirgan (ganciclovir)</p>	<p>Ophthalmic gel: 0.15%</p>	<p>One drop in the affected eye 5 times per day (approximately every 3 hours while awake) until the corneal ulcer heals, and then 1 drop 3 times per day for 7 days</p>
<p>Veregen (sinecatechins) ointment 15%</p> <p>Veregen is to be applied three times per day to all external genital and perianal warts.</p> <p>Apply about an 0.5 cm strand of the Veregen to each wart using the finger(s), dabbing it on to ensure complete coverage and leaving a thin layer of the ointment on the warts. Patients should wash their hands before and after application of Veregen.</p> <p>Treatment with Veregen should be continued until complete clearance of all warts, however no longer than 16 weeks.</p>	<p>Orthographic similarity</p> <p>Numerical overlap in strength (15% vs. 0.15%)</p> <p>Single strength</p> <p><i>Veregen. Zirgan</i></p> <p><i>Veregen</i> <i>Zirgan</i></p>	<p>The orthographic differences in the names help to distinguish between them. Although the names contain letters that may look similar when scripted ('er' vs. 'ir') and ('gen' vs. 'gan'), the beginning letters look different ('V' vs. 'Z'). Additionally, the letter 'e' in the middle of Veregen causes that name to look longer when scripted.</p>

Appendix M: Product name with strong orthographic similarity but no overlap in strength, dose, or route

Failure Mode: Name confusion	Causes (could be multiple)	Effects
<p>Zirgan (ganciclovir)</p>	<p>Ophthalmic gel: 0.15%</p>	<p>One drop in the affected eye 5 times per day (approximately every 3 hours while awake) until the corneal ulcer heals, and then 1 drop 3 times per day for 7 days</p>
<p>Ziagen (abacavir sulfate) Tablets: 300 mg Oral Solution: 20 mg/mL</p>	<p>Orthographic similarity</p> 	<p>The risk of medication errors is reduced by the differing product characteristics. Prescriptions written for Ziagen will require the dosage form and the dose or the number of tablets to be specified (i.e. 300 mg twice daily or 600 mg once daily). In contrast, due to the complexity of the dosing instructions for Zirgan, prescriptions will likely be written "Use as directed".</p>

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this page is the manifestation of the electronic signature.**

/s/

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5/28/2009 05:09:39 PM
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Denise Toyer
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