CENTER FOR DRUG EVALUATION AND RESEARCH

APPLICATION NUMBER:

202049Orig1s000

PROPRIETARY NAME REVIEW(S)

PROPRIETARY NAME REVIEW

Division of Medication Error Prevention and Analysis (DMEPA)
Office of Medication Error Prevention and Risk Management (OMEPRM)
Office of Surveillance and Epidemiology (OSE)
Center for Drug Evaluation and Research (CDER)

***** This document contains proprietary information that cannot be released to the public*****

Date of This Review:	July 27, 2020
Application Type and Number:	NDA 202049
Product Name and Strength:	Bronchitol (mannitol) inhalation powder , 40 mg
Product Type:	Combination Product (Drug-Device)
Rx or OTC:	Prescription (Rx)
Applicant/Sponsor Name:	Chiesi USA INC (Chiesi)
Panorama #:	2020-39726725
DMEPA Safety Evaluator:	Lissa C. Owens, PharmD
DMEPA Team Leader:	Idalia E. Rychlik, PharmD

Contents

1 INTRODUCTION

This review evaluates the proposed proprietary name, Bronchitol, from a safety and misbranding perspective. The sources and methods used to evaluate the proposed proprietary name are outlined in the reference section and Appendix A respectively. Chiesi submitted an external name study, conducted by (b) (4) for this proposed proprietary name.

1.1 REGULATORY HISTORY

Bronchitol (mannitol) inhalation powder is a dual-proprietary name request. Mannitol inhalation powder was approved under the name Aridol (NDA 022368) (OSE RCM #2008-1631 and #2009-1748[a]) for a different indication (assessment of bronchial hyperresponsiveness in patients 6 years of age or older who do not have clinically apparent asthma) by the same Applicant.

Bronchitol was previously reviewed under OSE RCM #2009-1743[b] and found conditionally acceptable under OSE RCM #2012-1434[c]; however, the application received a complete response on March 18, 2013. We re-reviewed the name during the application resubmission on December 19, 2018 under OSE RCM #2018- 28117517[d]; however, the application received another complete response on June 19, 2019.

Thus, Chiesi responded to the complete response and re-submitted the name, Bronchitol, for review on May 1, 2020.

1.2 PRODUCT INFORMATION

The following product information is provided in the proprietary name submission received on May 1, 2020.

- Intended Pronunciation: bron' ki tol
- Active Ingredient: mannitol
- Indication of Use: management of cystic fibrosis to improve pulmonary function in patients 18 years of age and older in conjunction with standard therapies
- Route of Administration: oral inhalation
- Dosage Form: inhalation powder
- Strength: 40 mg

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[a] Park, J. Proprietary Name Review for Aridol (mannitol) Inhalation Powder (IND 070277). Silver Spring (MD): FDA, CDER, OSE, DMEPA (US); 2009 MAR 13 and 2009 DEC 02. OSE RCM #2008-1631 and #2009-1748

[b] Park, J. Proprietary Name Review for Bronchitol (mannitol) Inhalation Powder (IND 070277). Silver Spring (MD): FDA, CDER, OSE, DMEPA (US); 2010 MAR 12. OSE RCM 2009-1743

[c] Owens, L. Proprietary Name Review for Bronchitol (mannitol) Inhalation Powder (NDA 202049). Silver Spring (MD): FDA, CDER, OSE, DMEPA (US); 2012 SEP 10. OSE RCM 2012-1434

[d] Owens, L. Proprietary Name Review for Bronchitol (mannitol) Inhalation Powder (NDA 202049). Silver Spring (MD): FDA, CDER, OSE, DMEPA (US); 2019 MAR 18. OSE RCM 2018- 28117517

- Dose and Frequency: 10 capsules (400 mg) twice a day, in the morning and evening, with the later dose taken 2-3 hours before bedtime
- How Supplied: Supplied in cartons containing 10, 140 or 560 capsules in blister packs. Each capsule contains 40 mg of mannitol. The capsules are clear and imprinted in black with "PXS 40 mg".
- Storage: 68°F-77°F (20°C-25°C) with excursions permitted between 59°F-86°F (15°C-30°C). Do not refrigerate. Do not freeze

2 RESULTS

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

2.1 MISBRANDING ASSESSMENT

The Office of Prescription Drug Promotion (OPDP) determined that Bronchitol would not misbrand the proposed product. The Division of Medication Error Prevention and Analysis (DMEPA) and the Division of Pulmonology, Allergy, and Critical Care (DPACC) concurred with the findings of OPDP's assessment for Bronchitol.

2.2 SAFETY ASSESSMENT

The following aspects were considered in the safety evaluation of the proposed proprietary name, Bronchitol.

2.2.1 United States Adopted Names (USAN) Search

There is no USAN stem present in the proposed proprietary name[e].

2.2.2 Components of the Proposed Proprietary Name

Chiesi did not provide a derivation or intended meaning for the proposed proprietary name, Bronchitol, in their submission. This proprietary name is comprised of a single that does not contain any components (i.e. a modifier, route of administration, dosage form, etc.) that are misleading or can contribute to medication error.

2.2.3 Comments from Other Review Disciplines at Initial Review

In response to the OSE, May 18, 2020 e-mail, the Division of Pulmonology, Allergy, and Critical Care (DPACC) did not forward any comments or concerns relating to Bronchitol at the initial phase of the review.

2.2.4 FDA Name Simulation Studies

Ninety (n=90) practitioners participated in DMEPA's prescription studies for Bronchitol.

[e] USAN stem search conducted on June 29, 2020.

One participant identified Brevidil in the CPOE portion of the FDA Name Simulation Study. Brevidil (suxamethonium bromide) injection is indicated in surgical, anesthetic and other procedures where a brief period of muscular relaxation is desired. However, it appears that one participant entered an incorrect sequence of letters, 'bre', when searching for the study name. As a result, the CPOE generated a pick list that did not contain Bronchitol as a choice. The participant proceeded to incorrectly select Brevidil as their response. Thus, in this case, it appears the participant attempted to select an answer that was closest to the response needed given the goal of the simulated study.

This name pair has sufficient phonetic and orthographic differences, with a combined POCA score of 56%, suggesting moderate similarity between Bronchitol and Brevidil. Orthographically, the infixes ('-onch-' vs. '-ev-') and suffixes ('-tol' vs. '-dil') of this name pair have notable differences. The lengths of the names are different (10 letters vs. 8 letters), thus contributing to the difference in appearance between the two names. Phonetically, the first ('Bron' vs. 'Bre'), second ('chi' vs. 'vi'), and third ('tol' vs. 'dil') syllables of this name pair have notable differences. Furthermore, we note that Brevidil is available as Brevidil-M and is a formerly marketed, foreign product available in the United Kingdom. Based on totality of consideration above, we determined the risk for a medication error between this name pair is adequately minimized. We note that this name pair was evaluated in our previous review[f] and we agree with the findings in our previous review for this name pair.

The remaining responses did not overlap with any currently marketed products nor did the responses sound or look similar to any currently marketed products or any products in the pipeline. Appendix B contains the results from the prescription simulation studies.

2.2.5 Phonetic and Orthographic Computer Analysis (POCA) Search Results

Our POCA search[g] identified 203 names with the combined score of ≥55% or individual orthographic or phonetic score of ≥70%. We had identified and evaluated some of the names in our previous proprietary name review. We re-evaluated the previously identified names of concern considering any lessons learned from recent post-marketing experience, which may have altered our previous conclusion regarding the acceptability of the name. We note that none of the product characteristics have changed and we agree with the findings from our previous review for the names evaluated previously. Therefore, we identified three names not previously analyzed. These names are included in Table 1 below.

2.2.6 Names Retrieved for Review Organized by Name Pair Similarity

Table 1 lists the number of names retrieved from our POCA search and the [redacted] (b) (4) external study. These name pairs are organized as highly similar, moderately similar or low similarity for further evaluation.

[f] Owens, L. Proprietary Name Review for Bronchitol (mannitol) Inhalation Powder (NDA 202049). Silver Spring (MD): FDA, CDER, OSE, DMEPA (US); 2019 MAR 18. OSE RCM 2018- 28117517

[g] POCA search conducted on June 29, 2020 in version 4.3.

Table 1. Names Retrieved for Review Organized by Name Pair Similarity	
Similarity Category	**Number of Names**
Highly similar name pair: combined match percentage score ≥70%	0
Moderately similar name pair: combined match percentage score ≥55% to ≤ 69%	3
Low similarity name pair: combined match percentage score ≤54%	0

2.2.7 Safety Analysis of Names with Potential Orthographic, Spelling, and Phonetic Similarities

Our analysis of the three names contained in Table 1 determined none of the names will pose a risk for confusion with Bronchitol as described in Appendices C through H.

2.2.8 Discussion of Dual Proprietary Name

This proposed proprietary name, Bronchitol is a dual propriety name. The Applicant intends to market two Mannitol Inhalation Powder products under two names, Bronchitol and Aridol. We evaluated the dual proprietary name in our previous review OSE RCM 2018- 28117517[h] and we maintain our previous evaluation.

2.2.9 Communication of DMEPA's Analysis at Midpoint of Review

DMEPA communicated our findings to the Division of Pulmonology, Allergy, and Critical Care (DPACC) via e-mail on July 27, 2020. At that time we also requested additional information or concerns that could inform our review. Per e-mail correspondence from the Division of Pulmonology, Allergy, and Critical Care (DPACC) on July 27, 2020, they stated no additional concerns with the proposed proprietary name, Bronchitol.

3 CONCLUSION

The proposed proprietary name, Bronchitol, is acceptable.

If you have any questions or need clarifications, please contact Cristina Attinello, OSE project manager, at 301-796-3986.

3.1 COMMENTS TO CHIESI USA INC

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

If any of the proposed product characteristics as stated in your submission, received on May 1, 2020, are altered prior to approval of the marketing application, the name must be resubmitted for review.

[h] Owens, L. Proprietary Name Review for Bronchitol (mannitol) Inhalation Powder (NDA 202049). Silver Spring (MD): FDA, CDER, OSE, DMEPA (US); 2019 MAR 18. OSE RCM 2018- 28117517

4 REFERENCES

1. USAN Stems (https://www.ama-assn.org/about/united-states-adopted-names-approved-stems)

USAN Stems List contains all the recognized USAN stems.

2. Phonetic and Orthographic Computer Analysis (POCA)

POCA is a system that FDA designed. As part of the name similarity assessment, POCA is used to evaluate proposed names via a phonetic and orthographic algorithm. The proposed proprietary name is converted into its phonemic representation before it runs through the phonetic algorithm. Likewise, an orthographic algorithm exists that operates in a similar fashion. POCA is publicly accessible.

Drugs@FDA

Drugs@FDA is an FDA Web site that contains most of the drug products approved in the United States 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*; *therapeutic biological products*, *prescription* and *over-the-counter* human drugs; and *discontinued drugs* (see Drugs @ FDA Glossary of Terms, available at http://www.fda.gov/Drugs/InformationOnDrugs/ucm079436.htm#ther_biological).

RxNorm

RxNorm contains the names of prescription and many OTC drugs available in the United States. RxNorm includes generic and branded:

- Clinical drugs – pharmaceutical products given to (or taken by) a patient with therapeutic or diagnostic intent
- Drug packs – packs that contain multiple drugs, or drugs designed to be administered in a specified sequence

Radiopharmaceuticals, contrast media, food, dietary supplements, and medical devices, such as bandages and crutches, are all out of scope for RxNorm (http://www.nlm.nih.gov/research/umls/rxnorm/overview.html).

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.

APPENDICES

Appendix A

FDA's Proprietary Name Risk Assessment evaluates proposed proprietary names for misbranding and safety concerns.

1. **Misbranding Assessment**: For prescription drug products, OPDP assesses the name for misbranding concerns. For over-the-counter (OTC) drug products, the misbranding assessment of the proposed name is conducted by DNDP. OPDP or DNDP evaluates proposed proprietary names to determine if the name is false or misleading, such as by making misrepresentations with respect to safety or efficacy. For example, a fanciful proprietary name may misbrand a product by suggesting that it has some unique effectiveness or composition when it does not (21 CFR 201.10(c)(3)). OPDP or DNDP provides their opinion to DMEPA for consideration in the overall acceptability of the proposed proprietary name.
2. **Safety Assessment**: The safety assessment is conducted by DMEPA, and includes the following:

a. Preliminary Assessment: We consider inclusion of USAN stems or other characteristics that when incorporated into a proprietary name may cause or contribute to medication errors (i.e., dosing interval, dosage form/route of administration, medical or product name abbreviations, names that include or suggest the composition of the drug product, etc.) See prescreening checklist below in Table 2*. 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. [i]

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

***Table 2- Prescreening Checklist for Proposed Proprietary Name**

	Answer the questions in the checklist below. Affirmative answers to any of these questions indicate a potential area of concern that should be carefully evaluated as described in this guidance.
Y/N	**Is the proposed name obviously similar in spelling and pronunciation to other names?**
	Proprietary names should not be similar in spelling or pronunciation to proprietary names, established names, or ingredients of other products.
Y/N	**Are there inert or inactive ingredients referenced in the proprietary name?**
	Proprietary names should not incorporate any reference to an inert or inactive ingredient in a way that might create an impression that the ingredient's value is greater than its true functional role in the formulation (21 CFR 201.10(c)(4)).
Y/N	**Does the proprietary name include combinations of active ingredients?**
	Proprietary names of fixed combination drug products should not include or suggest the name of one or more, but not all, of its active ingredients (see 21 CFR 201.6(b)).
Y/N	**Is there a United States Adopted Name (USAN) stem in the proprietary name?**
	Proprietary names should not incorporate a USAN stem in the position that USAN designates for the stem.
Y/N	**Is this proprietary name used for another product that does not share at least one common active ingredient?**
	Drug products that do not contain at least one common active ingredient should not use the same (root) proprietary name.
Y/N	**Is this a proprietary name of a discontinued product?**
	Proprietary names should not use the proprietary name of a discontinued product if that discontinued drug product does not contain the same active ingredients.

b. Phonetic and Orthographic Computer Analysis (POCA): Following the preliminary screening of the proposed proprietary name, DMEPA staff evaluates the proposed name against potentially similar names. In order to identify names with potential similarity to the proposed proprietary name, DMEPA enters the proposed proprietary name in POCA and queries the name against the following drug reference databases, Drugs@fda, CernerRxNorm, and names in the review pipeline using a 55% threshold in POCA. DMEPA reviews the combined orthographic and phonetic matches and group the names into one of the following three categories:

- Highly similar pair: combined match percentage score ≥70%.
- Moderately similar pair: combined match percentage score ≥55% to ≤ 69%.
- Low similarity: combined match percentage score ≤54%.

Using the criteria outlined in the check list (Table 3-5) that corresponds to each of the three categories (highly similar pair, moderately similar pair, and low similarity), DMEPA evaluates the name pairs to determine the acceptability or non-acceptability of a proposed proprietary name. The intent of these checklists is to increase the transparency and predictability of the safety determination of whether a proposed name is vulnerable to confusion from a look-alike or sound-alike perspective. Each bullet below corresponds to the name similarity category cross-references the respective table that addresses criteria that DMEPA uses to determine whether a name presents a safety concern from a look-alike or sound-alike perspective.

- For highly similar names, differences in product characteristics often cannot mitigate the risk of a medication error, including product differences such as strength and dose. Thus, proposed proprietary names that have a combined score of ≥ 70 percent are at risk for a look-alike sound-alike confusion which is an area of concern (See Table 3).
- Moderately similar names are further evaluated to identify the presence of attributes that are known to cause name confusion.
    - Name attributes: We note that the beginning of the drug name plays a significant role in contributing to confusion. Additionally, drug name pairs that start with the same first letter and contain a shared letter string of at least 3 letters in both names are major contributing factor in the confusion of drug names[j]. We evaluate all moderately similar names retrieved from POCA to identify the above attributes. These names are further evaluated to identify overlapping or similar strengths or doses.
    - Product attributes: Moderately similar names of products that have overlapping or similar strengths or doses represent an area for concern for FDA. The dose and strength information is often located in close proximity to the drug name itself on prescriptions and medication orders, and the information can be an important factor that either increases or decreases the potential for confusion between similarly named drug pairs. The ability of other product characteristics to mitigate confusion (e.g., route, frequency, dosage form) may be limited when the strength or dose overlaps. DMEPA reviews such names further, to determine whether sufficient differences exist to prevent confusion. (See Table 4).

- Names with low similarity that have no overlap or similarity in strength and dose are generally acceptable (See Table 5) unless there are data to suggest that the name might be vulnerable to confusion (e.g., prescription simulation study suggests that the name is likely to be misinterpreted as a marketed product). In these instances, we would reassign a low similarity name to the moderate similarity category and review according to the moderately similar name pair checklist.

[j] Shah, M, Merchant, L, Characteristics That May Help in the Identification of Potentially Confusing Proprietary Drug Names. Therapeutic Innovation & Regulatory Science, September 2016

c. FDA Prescription Simulation Studies: DMEPA staff also conducts a prescription simulation studies using FDA health care professionals.

   Four 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, verbal pronunciation of the drug name or during computerized provider order entry. 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 vulnerability of the proposed name to be misinterpreted by healthcare practitioners during written, verbal, or electronic prescribing.

   In order to evaluate the potential for misinterpretation of the proposed proprietary name during written, verbal, or electronic prescribing of the name, written inpatient medication orders, written outpatient prescriptions, verbal orders, and electronic orders are simulated, each consisting of a combination of marketed and unapproved drug products, including the proposed name.

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

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

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

   When provided, DMEPA considers external proprietary name studies conducted by or for the Applicant/Sponsor and incorporates the findings of these studies into the overall risk assessment.

The DMEPA primary reviewer assigned to evaluate the proposed proprietary name is responsible for considering the collective findings, and provides an overall risk assessment of the proposed proprietary name.

Table 3. Highly Similar Name Pair Checklist (i.e., combined Orthographic and Phonetic score is ≥ 70%).

Answer the questions in the checklist below. Affirmative answers to some of these questions suggest that the pattern of orthographic or phonetic differences in the names may render the names less likely to confusion, provided that the pair does not share a common strength or dose.			
Orthographic Checklist		Phonetic Checklist	
Y/N	Do the names begin with different first letters? *Note that even when names begin with different first letters, certain letters may be confused with each other when scripted.*	**Y/N**	Do the names have different number of syllables?
Y/N	Are the lengths of the names dissimilar* when scripted? **FDA considers the length of names different if the names differ by two or more letters.*	**Y/N**	Do the names have different syllabic stresses?
Y/N	Considering variations in scripting of some letters (such as *z* and *f*), is there a different number or placement of upstroke/downstroke letters present in the names?	**Y/N**	Do the syllables have different phonologic processes, such vowel reduction, assimilation, or deletion?
Y/N	Is there different number or placement of cross-stroke or dotted letters present in the names?	**Y/N**	Across a range of dialects, are the names consistently pronounced differently?
Y/N	Do the infixes of the name appear dissimilar when scripted?		
Y/N	Do the suffixes of the names appear dissimilar when scripted?		

Table 4: Moderately Similar Name Pair Checklist (i.e., combined score is ≥55% to ≤69%).

Step 1	Review the DOSAGE AND ADMINISTRATION and HOW SUPPLIED/STORAGE AND HANDLING sections of the prescribing information (or for OTC drugs refer to the Drug Facts label) to determine if strengths and doses of the name pair overlap or are very similar. Different strengths and doses for products whose names are moderately similar may decrease the risk of confusion between the moderately similar name pairs. Name pairs that have overlapping or similar strengths or doses have a higher potential for confusion and should be evaluated further (see Step 2). Because the strength or dose could be used to express an order or prescription for a particular drug product, overlap in one or both of these components would be reason for further evaluation. For single strength products, also consider circumstances where the strength may not be expressed. For any i.e. drug products comprised of more than one active ingredient, consider whether the strength or dose may be expressed using only one of the components. To determine whether the strengths or doses are similar to your proposed product, consider the following list of factors that may increase confusion: • Alternative expressions of dose: 5 mL may be listed in the prescribing information, but the dose may be expressed in metric weight (e.g., 500 mg) or in non-metric units (e.g., 1 tsp, 1 tablet/capsule). Similarly, a strength or dose of 1000 mg may be expressed, in practice, as 1 g, or vice versa. • Trailing or deleting zeros: 10 mg is similar in appearance to 100 mg which may potentiate confusion between a name pair with moderate similarity. • Similar sounding doses: 15 mg is similar in sound to 50 mg
Step 2	Answer the questions in the checklist below. Affirmative answers to some of these questions suggest that the pattern of orthographic or phonetic differences in the names may reduce the likelihood of confusion for moderately similar names **with** overlapping or similar strengths or doses.

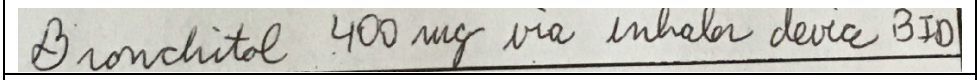
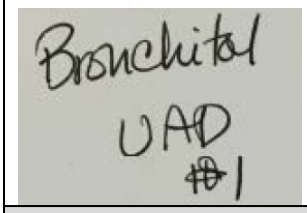
	Orthographic Checklist (Y/N to each question) • Do the names begin with different first letters? Note that even when names begin with different first letters, certain letters may be confused with each other when scripted. • Are the lengths of the names dissimilar* when scripted? *FDA considers the length of names different if the names differ by two or more letters. • Considering variations in scripting of some letters (such as *z* and *f*), is there a different number or placement of upstroke/downstroke letters present in the names? • Is there different number or placement of cross-stroke or dotted letters present in the names? • Do the infixes of the name appear dissimilar when scripted? • Do the suffixes of the names appear dissimilar when scripted?	Phonetic Checklist (Y/N to each question) • Do the names have different number of syllables? • Do the names have different syllabic stresses? • Do the syllables have different phonologic processes, such vowel reduction, assimilation, or deletion? • Across a range of dialects, are the names consistently pronounced differently?

Table 5: Low Similarity Name Pair Checklist (i.e., combined score is ≤54%).

Names with low similarity are generally acceptable unless there are data to suggest that the name might be vulnerable to confusion (e.g., prescription simulation study suggests that the name is likely to be misinterpreted as a marketed product). In these instances, we would reassign a low similarity name to the moderate similarity category and review according to the moderately similar name pair checklist.

Appendix B: Prescription Simulation Samples and Results

Figure 1. Bronchitol Study (Conducted on June 9, 2020)

Handwritten Medication Order/Prescription	**Verbal Prescription**
Medication Order:  	Bronchitol UAD #1
Outpatient Prescription:  	
CPOE Study Sample (displayed as sans-serif, 12-point, bold font)	
Bronchitol	

Study Name: Bronchitol
As of Date 7/2/2020

207 People Received Study
90 People Responded

Study Name: Bronchitol

Total	34	18	15	23	
INTERPRETATION	**OUTPATIENT**	**CPOE**	**VOICE**	**INPATIENT**	**TOTAL**
BREVIDIL	0	1	0	0	1
BRINCHITAL	0	0	0	1	1
BRONCATOL	0	0	4	0	4
BRONCHATAL	0	0	1	0	1
BRONCHITAL	11	0	2	1	14
BRONCHITAL VAD	1	0	0	0	1
BRONCHITOL	21	17	1	20	59
BRONCHOTOL	0	0	2	0	2
BRONDRITOL	0	0	0	1	1
BRONHITAL	1	0	0	0	1
BRONKATOL	0	0	1	0	1
BRONKETOL	0	0	1	0	1
RONKATOL	0	0	2	0	2
RONKETAL	0	0	1	0	1

Appendix C: Highly Similar Names (e.g., combined POCA score is ≥70%)- N/A

Appendix D: Moderately Similar Names (e.g., combined POCA score is ≥55% to ≤69%) with no overlap or numerical similarity in Strength and/or Dose -N/A

Appendix E: Moderately Similar Names (e.g., combined POCA score is ≥55% to ≤69%) with overlap or numerical similarity in Strength and/or Dose

No.	**Proposed name:** Bronchitol **Established name:** mannitol **Dosage form:** inhalation powder **Strength(s):** 40 mg **Usual Dose:** 10 capsules (400 mg) twice a day	POCA Score (%)	**Prevention of Failure Mode** **In the conditions outlined below, the following combination of factors, are expected to minimize the risk of confusion between these two names**
1.	(b) (4) ***	58	This name pair has sufficient orthographic and phonetic differences.

Appendix F: Low Similarity Names (e.g., combined POCA score is ≤54%)- N/A

Appendix G: Names not likely to be confused or not used in usual practice settings for the reasons described**.**

No.	Name	POCA Score (%)	Failure preventions
2.	Chiro-Inositol, (+)-	64	Name identified on Rx Norm. Unable to find product characteristics in commonly used drug databases.

Appendix H: Names not likely to be confused due to absence of attributes that are known to cause name confusion[k].

No.	Name	POCA Score (%)
3.	Norfenicol	62

[k] Shah, M, Merchant, L, Chan, I, and Taylor, K. Characteristics That May Help in the Identification of Potentially Confusing Proprietary Drug Names. Therapeutic Innovation & Regulatory Science, September 2016

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/s/

LISSA C OWENS
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PROPRIETARY NAME REVIEW

Division of Medication Error Prevention and Analysis (DMEPA)

Office of Medication Error Prevention and Risk Management (OMEPRM)

Office of Surveillance and Epidemiology (OSE)

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Thus, Chiesi USA Inc re-submitted the name, Bronchitol, for review on December 19, 2018.

1.2 PRODUCT INFORMATION

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- Intended Pronunciation: BRONK-ih-tol
- Active Ingredient: mannitol
- Indication of Use: management of cystic fibrosis to improve pulmonary function in patients 18 years and older in conjunction with standard therapies
- Route of Administration: Oral Inhalation
- Dosage Form: Inhalation Powder
- Strength: 40 mg
- Dose and Frequency: 10 capsules (400 mg) twice daily
- How Supplied: cartons containing 10, 140 or 560 capsules in blister packs

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[a] Park, J. Proprietary Name Review for Aridol (mannitol) Inhalation Powder (IND 070277). Silver Spring (MD): FDA, CDER, OSE, DMEPA (US); 2009 MAR 13 and 2009 DEC 02. OSE RCM #2008-1631 and #2009-1748

[b] Park, J. Proprietary Name Review for Bronchitol (mannitol) Inhalation Powder (IND 070277). Silver Spring (MD): FDA, CDER, OSE, DMEPA (US); 2010 MAR 12. OSE RCM 2009-1743

[c] Owens, L. Proprietary Name Review for Bronchitol (mannitol) Inhalation Powder (NDA 202049). Silver Spring (MD): FDA, CDER, OSE, DMEPA (US); 2012 SEP 10. OSE RCM 2012-1434

- Storage: stored between 68°F -77°F (20°C -25°C) with excursions permitted between 59°F -86°F (15°C -30°C). The Training Kit, containing empty gelatin capsules, should be stored between 68°F -77°F (20°C -25°C) with excursions permitted from 59°F -86°F (15°C -30°C).

2 RESULTS

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

2.1 MISBRANDING ASSESSMENT

The Office of Prescription Drug Promotion (OPDP) determined that Bronchitol would not misbrand the proposed product. The Division of Medication Error Prevention and Analysis (DMEPA) and the Division of Pulmonary, Allergy, and Rheumatology Products (DPARP) concurred with the findings of OPDP's assessment for Bronchitol.

2.2 SAFETY ASSESSMENT

The following aspects were considered in the safety evaluation of the proposed proprietary name, Bronchitol.

2.2.1 United States Adopted Names (USAN) Search

There is no USAN stem present in the proposed proprietary name[d].

2.2.2 Components of the Proposed Proprietary Name

Chiesi USA Inc did not provide a derivation or intended meaning for the proposed proprietary name, Bronchitol, in their submission. This proprietary name is comprised of a single word that does not contain any components (i.e. a modifier, route of administration, dosage form, etc.) that are misleading or can contribute to medication error.

2.2.3 Comments from Other Review Disciplines at Initial Review

In response to the OSE, January 11, 2019 e-mail, the Division of Pulmonary, Allergy, and Rheumatology Products (DPARP) did not forward any comments or concerns relating to Bronchitol at the initial phase of the review.

2.2.4 FDA Name Simulation Studies

Ninety-two practitioners participated in DMEPA's prescription studies for Bronchitol. The responses did not overlap with any currently marketed products nor did the responses sound or look similar to any currently marketed products or any products in the pipeline. Appendix B contains the results from the verbal and written prescription studies.

[d] USAN stem search conducted on February 26, 2019.

2.2.5 Phonetic and Orthographic Computer Analysis (POCA) Search Results

Our POCA search[e] identified 200 names with a combined phonetic and orthographic score of ≥55% or an individual phonetic or orthographic score ≥70%. These names are included in Table 1 below.

2.2.6 Names Retrieved for Review Organized by Name Pair Similarity

Table 1 lists the number of names retrieved from our POCA search. These name pairs are organized as highly similar, moderately similar or low similarity for further evaluation.

Table 1. Names Retrieved for Review Organized by Name Pair Similarity	
Similarity Category	Number of Names
Highly similar name pair: combined match percentage score ≥70%	14
Moderately similar name pair: combined match percentage score ≥55% to ≤ 69%	182
Low similarity name pair: combined match percentage score ≤54%	4

2.2.7 Safety Analysis of Names with Potential Orthographic, Spelling, and Phonetic Similarities

Our analysis of the 200 names contained in Table 1 determined none of the names will pose a risk for confusion with Bronchitol as described in Appendices C through H.

2.2.8 Discussion of Dual Proprietary Name

TABLE 2: SUMMARY OF PRODUCT CHARACTERISTICS OF BRONCHITOL AND ARIDOL

	Bronchitol (NDA 202049)	Aridol (NDA 022368)
Indication	management of cystic fibrosis to improve pulmonary function in patients 18 years and older in conjunction with standard therapies	Assessment of bronchial hyperresponsiveness in patients 6 years of age or older who do not have clinically apparent asthma
Strength	40 mg per capsule	Bronchial challenge test kit containing single patient use, dry powder inhaler device and 3 consecutively

[e] POCA search conducted on February 14, 2019 in version 4.3.

		numbered foil blister packs containing a total of 19 capsules in graduated doses of 0 mg, 5 mg, 10 mg, 20 mg, and 40 mg
Dose and Frequency	400 mg twice daily	Ranges from 0 mg to 160 mg once. Capsule contents are to be inhaled in increasing dosage until either a positive response (15% reduction in FEV1 from baseline or a 10% incremental reduction in FEV1 between consecutive doses) is achieved or all capsules are inhaled (maximum total dose 635 mg)
Dosage Form	Inhalation Powder	Inhalation Powder
How Supplied	cartons containing 10, 140 or 560 capsules in blister packs	Kit containing 19 capsules and one inhalation device: Blister pack "1": • Marked 1 - 1 x empty clear capsule (b) (4) • Marked 2 - 1 x 5 mg white/clear capsule printed with 5 mg • Marked 3 - 1 x 10 mg yellow/clear capsule printed with 10 mg • Marked 4 - 1 x 20 mg pink/clear capsule printed with 20 mg Blister pack "2": • Marked 5 - 1 x 40 mg red/clear capsule printed with 40 mg • Marked 6 - 2 x 40 mg red/clear capsules printed with 40 mg • Marked 7 - 4 x 40 mg red/clear capsules printed with 40 mg Blister pack "3": • Marked 8 - 4 x 40 mg red/clear capsules printed with 40 mg • Marked 9 - 4 x 40 mg red/clear capsules printed with 40 mg

This proposed proprietary name, Bronchitol is a dual propriety name. The Applicant intends to market two Mannitol Inhalation Powder products under two names, Bronchitol and Aridol. Mannitol Inhalation Powder is currently marketed under the name 'Aridol'. A primary difference between the two products is that Bronchitol is a drug for the management of cystic fibrosis to improve pulmonary function, while Aridol is used only for diagnostic purposes (indicated for bronchial challenge tests to assess the bronchial hyperresponsiveness. We assessed the risk of the dual proprietary name in our previous reviews and we maintain our previous evaluation.

2.2.9 Communication of DMEPA's Analysis at Midpoint of Review

DMEPA communicated our findings to the Division of Pulmonary, Allergy, and Rheumatology Products (DPARP) via e-mail on March 14, 2019. At that time, we also requested additional information or concerns that could inform our review. Per e-mail correspondence from the Division of Pulmonary, Allergy, and Rheumatology Products (DPARP) on March 18, 2019, they stated no additional concerns with the proposed proprietary name, Bronchitol.

3 CONCLUSION

The proposed proprietary name, Bronchitol, is acceptable.

If you have any questions or need clarifications, please contact Michael Sinks, OSE project manager, at 240-402-2684.

3.1 COMMENTS TO CHIESI USA INC.

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

If any of the proposed product characteristics as stated in your submission, received on December 19, 2018, are altered prior to approval of the marketing application, the name must be resubmitted for review.

4 REFERENCES

1. *USAN Stems (https://www.ama-assn.org/about/united-states-adopted-names-approved-stems)*

   USAN Stems List contains all the recognized USAN stems.

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

POCA is a system that FDA designed. As part of the name similarity assessment, POCA is used to evaluate proposed names via a phonetic and orthographic algorithm. The proposed proprietary name is converted into its phonemic representation before it runs through the phonetic algorithm. Likewise, an orthographic algorithm exists that operates in a similar fashion. POCA is publicly accessible.

Drugs@FDA

Drugs@FDA is an FDA Web site that contains most of the drug products approved in the United States 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*; *therapeutic biological products*, *prescription* and *over-the-counter* human drugs; and *discontinued drugs* (see Drugs @ FDA Glossary of Terms, available at http://www.fda.gov/Drugs/InformationOnDrugs/ucm079436.htm#ther_biological).

RxNorm

RxNorm contains the names of prescription and many OTC drugs available in the United States. RxNorm includes generic and branded:

- Clinical drugs – pharmaceutical products given to (or taken by) a patient with therapeutic or diagnostic intent
- Drug packs – packs that contain multiple drugs, or drugs designed to be administered in a specified sequence

Radiopharmaceuticals, contrast media, food, dietary supplements, and medical devices, such as bandages and crutches, are all out of scope for RxNorm (http://www.nlm.nih.gov/research/umls/rxnorm/overview.html#).

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.

APPENDICES

Appendix A

FDA's Proprietary Name Risk Assessment evaluates proposed proprietary names for misbranding and safety concerns.

1. Misbranding Assessment: For prescription drug products, OPDP assesses the name for misbranding concerns. For over-the-counter (OTC) drug products, the misbranding assessment of the proposed name is conducted by DNDP. OPDP or DNDP evaluates proposed proprietary names to determine if the name is false or misleading, such as by making misrepresentations with respect to safety or efficacy. For example, a fanciful proprietary name may misbrand a product by suggesting that it has some unique effectiveness or composition when it does not (21 CFR 201.10(c)(3)). OPDP or DNDP provides their opinion to DMEPA for consideration in the overall acceptability of the proposed proprietary name.
2. Safety Assessment: The safety assessment is conducted by DMEPA, and includes the following:

a. Preliminary Assessment: We consider inclusion of USAN stems or other characteristics that when incorporated into a proprietary name may cause or contribute to medication errors (i.e., dosing interval, dosage form/route of administration, medical or product name abbreviations, names that include or suggest the composition of the drug product, etc.) See prescreening checklist below in Table 2*. 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. 6F[f]

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

*Table 2- Prescreening Checklist for Proposed Proprietary Name

	Answer the questions in the checklist below. Affirmative answers to any of these questions indicate a potential area of concern that should be carefully evaluated as described in this guidance.
Y/N	Is the proposed name obviously similar in spelling and pronunciation to other names?
	Proprietary names should not be similar in spelling or pronunciation to proprietary names, established names, or ingredients of other products.
Y/N	Are there inert or inactive ingredients referenced in the proprietary name?
	Proprietary names should not incorporate any reference to an inert or inactive ingredient in a way that might create an impression that the ingredient's value is greater than its true functional role in the formulation (21 CFR 201.10(c)(4)).
Y/N	Does the proprietary name include combinations of active ingredients?
	Proprietary names of fixed combination drug products should not include or suggest the name of one or more, but not all, of its active ingredients (see 21 CFR 201.6(b)).
Y/N	Is there a United States Adopted Name (USAN) stem in the proprietary name?
	Proprietary names should not incorporate a USAN stem in the position that USAN designates for the stem.
Y/N	Is this proprietary name used for another product that does not share at least one common active ingredient?
	Drug products that do not contain at least one common active ingredient should not use the same (root) proprietary name.
Y/N	Is this a proprietary name of a discontinued product?
	Proprietary names should not use the proprietary name of a discontinued product if that discontinued drug product does not contain the same active ingredients.

b. Phonetic and Orthographic Computer Analysis (POCA): Following the preliminary screening of the proposed proprietary name, DMEPA staff evaluates the proposed name against potentially similar names. In order to identify names with potential similarity to the proposed proprietary name, DMEPA enters the proposed proprietary name in POCA and queries the name against the following drug reference databases, Drugs@fda, CernerRxNorm, and names in the review pipeline using a 55% threshold in POCA.

DMEPA reviews the combined orthographic and phonetic matches and group the names into one of the following three categories:

- Highly similar pair: combined match percentage score ≥70%.
- Moderately similar pair: combined match percentage score ≥55% to ≤ 69%.
- Low similarity: combined match percentage score ≤54%.

Using the criteria outlined in the check list (Table 3-5) that corresponds to each of the three categories (highly similar pair, moderately similar pair, and low similarity), DMEPA evaluates the name pairs to determine the acceptability or non-acceptability of a proposed proprietary name. The intent of these checklists is to increase the transparency and predictability of the safety determination of whether a proposed name is vulnerable to confusion from a look-alike or sound-alike perspective. Each bullet below corresponds to the name similarity category cross-references the respective table that addresses criteria that DMEPA uses to determine whether a name presents a safety concern from a look-alike or sound-alike perspective.

- For highly similar names, differences in product characteristics often cannot mitigate the risk of a medication error, including product differences such as strength and dose. Thus, proposed proprietary names that have a combined score of ≥ 70 percent are at risk for a look-alike sound-alike confusion which is an area of concern (See Table 3).
- Moderately similar names are further evaluated to identify the presence of attributes that are known to cause name confusion.
    - Name attributes: We note that the beginning of the drug name plays a significant role in contributing to confusion. Additionally, drug name pairs that start with the same first letter and contain a shared letter string of at least 3 letters in both names are major contributing factor in the confusion of drug names7F[g]. We evaluate all moderately similar names retrieved from POCA to identify the above attributes. These names are further evaluated to identify overlapping or similar strengths or doses.
    - Product attributes: Moderately similar names of products that have overlapping or similar strengths or doses represent an area for concern for FDA. The dose and strength information is often located in close proximity to the drug name itself on prescriptions and medication orders, and the information can be an important factor that either increases or decreases the potential for confusion between similarly named drug pairs. The ability of other product characteristics to mitigate confusion (e.g., route, frequency, dosage form) may be limited when the strength or dose overlaps. DMEPA reviews such names further, to determine whether sufficient differences exist to prevent confusion. (See Table 4).

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[g] Shah, M, Merchant, L, Characteristics That May Help in the Identification of Potentially Confusing Proprietary Drug Names. Therapeutic Innovation & Regulatory Science, September 2016

- Names with low similarity that have no overlap or similarity in strength and dose are generally acceptable (See Table 5) unless there are data to suggest that the name might be vulnerable to confusion (e.g., prescription simulation study suggests that the name is likely to be misinterpreted as a marketed product). In these instances, we would reassign a low similarity name to the moderate similarity category and review according to the moderately similar name pair checklist.

c. FDA Prescription Simulation Studies: DMEPA staff also conducts a prescription simulation studies using FDA health care professionals.

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

   In order to evaluate the potential for misinterpretation of the proposed proprietary name in handwriting and verbal communication of the name, inpatient medication orders and/or outpatient prescriptions are written, each consisting of a combination of marketed and unapproved drug products, including the proposed name. These orders are optically scanned and one prescription is delivered to a random sample of participating health professionals via e-mail. In addition, a verbal prescription is recorded on voice mail. The voice mail messages are then sent to a random sample of the participating health professionals for their interpretations and review. After receiving either the written or verbal prescription orders, the participants record their interpretations of the orders which are recorded electronically.

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

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

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

When provided, DMEPA considers external proprietary name studies conducted by or for the Applicant/Sponsor and incorporates the findings of these studies into the overall risk assessment.

The DMEPA primary reviewer assigned to evaluate the proposed proprietary name is responsible for considering the collective findings, and provides an overall risk assessment of the proposed proprietary name.

Table 3. Highly Similar Name Pair Checklist (i.e., combined Orthographic and Phonetic score is ≥ 70%).

Answer the questions in the checklist below. Affirmative answers to some of these questions suggest that the pattern of orthographic or phonetic differences in the names may render the names less likely to confusion, provided that the pair does not share a common strength or dose.			
Orthographic Checklist		Phonetic Checklist	
Y/N	Do the names begin with different first letters? *Note that even when names begin with different first letters, certain letters may be confused with each other when scripted.*	Y/N	Do the names have different number of syllables?
Y/N	Are the lengths of the names dissimilar* when scripted? **FDA considers the length of names different if the names differ by two or more letters.*	Y/N	Do the names have different syllabic stresses?
Y/N	Considering variations in scripting of some letters (such as *z* and *f*), is there a different number or placement of upstroke/downstroke letters present in the names?	Y/N	Do the syllables have different phonologic processes, such vowel reduction, assimilation, or deletion?
Y/N	Is there different number or placement of cross-stroke or dotted letters present in the names?	Y/N	Across a range of dialects, are the names consistently pronounced differently?
Y/N	Do the infixes of the name appear dissimilar when scripted?		

Y/N	Do the suffixes of the names appear dissimilar when scripted?		

Table 4: Moderately Similar Name Pair Checklist (i.e., combined score is **≥55%** to **≤69%).**

Step 1	Review the DOSAGE AND ADMINISTRATION and HOW SUPPLIED/STORAGE AND HANDLING sections of the prescribing information (or for OTC drugs refer to the Drug Facts label) to determine if strengths and doses of the name pair overlap or are very similar. Different strengths and doses for products whose names are moderately similar may decrease the risk of confusion between the moderately similar name pairs. Name pairs that have overlapping or similar strengths or doses have a higher potential for confusion and should be evaluated further (see Step 2). Because the strength or dose could be used to express an order or prescription for a particular drug product, overlap in one or both of these components would be reason for further evaluation. For single strength products, also consider circumstances where the strength may not be expressed. For any i.e. drug products comprised of more than one active ingredient, consider whether the strength or dose may be expressed using only one of the components. To determine whether the strengths or doses are similar to your proposed product, consider the following list of factors that may increase confusion: • Alternative expressions of dose: 5 mL may be listed in the prescribing information, but the dose may be expressed in metric weight (e.g., 500 mg) or in non-metric units (e.g., 1 tsp, 1 tablet/capsule). Similarly, a strength or dose of 1000 mg may be expressed, in practice, as 1 g, or vice versa. • Trailing or deleting zeros: 10 mg is similar in appearance to 100 mg which may potentiate confusion between a name pair with moderate similarity. • Similar sounding doses: 15 mg is similar in sound to 50 mg
Step 2	Answer the questions in the checklist below. Affirmative answers to some of these questions suggest that the pattern of orthographic or phonetic differences in the names may reduce the likelihood of confusion for moderately similar names <u>with</u> overlapping or similar strengths or doses.

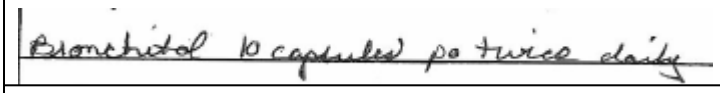
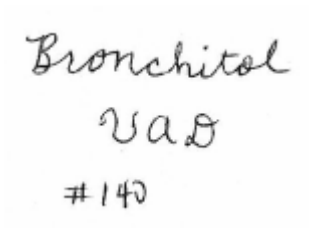
	Orthographic Checklist (Y/N to each question) • Do the names begin with different first letters? Note that even when names begin with different first letters, certain letters may be confused with each other when scripted. • Are the lengths of the names dissimilar* when scripted? *FDA considers the length of names different if the names differ by two or more letters. • Considering variations in scripting of some letters (such as *z* and *f*), is there a different number or placement of upstroke/downstroke letters present in the names? • Is there different number or placement of cross-stroke or dotted letters present in the names? • Do the infixes of the name appear dissimilar when scripted? • Do the suffixes of the names appear dissimilar when scripted?	Phonetic Checklist (Y/N to each question) • Do the names have different number of syllables? • Do the names have different syllabic stresses? • Do the syllables have different phonologic processes, such vowel reduction, assimilation, or deletion? • Across a range of dialects, are the names consistently pronounced differently?

Table 5: Low Similarity Name Pair Checklist (i.e., combined score is **≤54%).**

Names with low similarity are generally acceptable unless there are data to suggest that the name might be vulnerable to confusion (e.g., prescription simulation study suggests that the name is likely to be misinterpreted as a marketed product). In these instances, we would reassign a low similarity name to the moderate similarity category and review according to the moderately similar name pair checklist.

Appendix B: Prescription Simulation Samples and Results

Figure 1. Bronchitol Study (Conducted on January 25, 2019)

Handwritten Medication Order/Prescription	Verbal Prescription
Medication Order:  Outpatient Prescription: 	Bronchitol UAD #140

Study Name: Bronchitol

As of Date 3/1/2019

283 People Received Study

92 People Responded

Study Name: Bronchitol

Total	53	19	20	
INTERPRETATION	OUTPATIENT	VOICE	INPATIENT	TOTAL
BRANCATAL	0	1	0	1
BROCHITOL	1	0	0	1
BROCKATOL	0	1	0	1
BRONCATAL	0	1	0	1
BRONCHATAL	0	2	0	2
BRONCHATALL	0	1	0	1
BRONCHATOL	0	2	0	2

BRONCHIAL VAD	1	0	0	1
BRONCHIT	0	0	0	0
BRONCHITAL	1	1	0	2
BRONCHITO	0	0	0	0
BRONCHITOL	49	2	20	71
BRONCHITOL UAD	1	0	0	1
BRONCHOTOL	0	1	0	1
BRONCOTAL	0	2	0	2
BRONKATAL	0	2	0	2
BRONKATALL	0	1	0	1
BRONKATOL	0	1	0	1
ONTOL	0	1	0	1

Appendix C: Highly Similar Names (e.g., combined POCA score is ≥70%)

No.	Proposed name: Bronchitol Established name: mannitol Dosage form: Inhalation Powder Strength(s): 40 mg Usual Dose: 10 capsules (400 mg) twice daily	POCA Score (%)	Orthographic and/or phonetic differences in the names sufficient to prevent confusion Other prevention of failure mode expected to minimize the risk of confusion between these two names.
1.	Bronchitol***	100	Name is the subject of this review
2.	Bronchodil	80	Foreign drug product not available in the U.S.
3.	Bromatol	78	Name identified by Rx Norm. Unable to find product characteristics in commonly used drug databases
4.	Bronkosol	78	Product is discontinued with no generic equivalents available
5.	Broncodur	74	Name identified by Rx Norm. Unable to find product characteristics in commonly used drug databases.
6.	Broncolin	74	The infixes/suffixes of the names ('-hitol' vs. '-olin')provide sufficient orthographic differences. The last syllables (-tol vs. -lin) provide sufficient phonetic differences. Product Characteristics: Brocolin is a family name used for a variety of over-the-counter products. A dosage form (ointment, capsules, lozenge) would have to be specified for this product. The dose/frequency of these products (*Broncolin Ointment* [Rub on throat and chest up to three times daily], *Broncolin Cold and Flu Relief* [2 soft gels every 4 hours], *Brocolin Herbal Extracts and Honey, Broncolin Honey Eucalyptus, Broncolin Honey Lemon* [Dissolve 1 drop in the mouth, may repeat every hour as needed]) do not overlap with the proposed product, which further differentiates this family of products from the proposed product.

No.	Proposed name: Bronchitol Established name: mannitol Dosage form: Inhalation Powder Strength(s): 40 mg Usual Dose: 10 capsules (400 mg) twice daily	POCA Score (%)	Orthographic and/or phonetic differences in the names sufficient to prevent confusion Other prevention of failure mode expected to minimize the risk of confusion between these two names.
7.	Bronkodyl	74	Product is discontinued with no generic equivalents
8.	Broncotron	73	The infixes/suffixes ('-hitol' vs. '-otron') provide sufficient orthographic differences. The last syllables (-tol vs. -tron) provide sufficient phonetic differences. Product Characteristics: Broncotron is a discontinued liquid, over-the-counter dextromethorphan hydrobromide/ guaifenesin product. The frequency for Bronchitol (twice daily) does not overlap with that of Broncotron (every 4 hours).
9.	Bronopol	72	Product is a veterinary drug product
10.	Broncopectol	71	Product is discontinued with no generic equivalents
11.	Bromperidol	70	Foreign drug product not available in the U.S.
12.	Brondil	70	Foreign drug product not available in the U.S.
13.	Protectol	70	Product is discontinued with no generic equivalents
14.	Trancopal	70	Product is discontinued with no generic equivalents

Appendix D: Moderately Similar Names (e.g., combined POCA score is ≥55% to ≤69%) with no overlap or numerical similarity in Strength and/or Dose

No.	Name	POCA Score (%)
15.	Prednisol	64
16.	Blis-To-Sol	62
17.	Brevital	62
18.	Pronestyl	61
19.	Rocaltrol	61
20.	Pronto Plus	60
21.	Tirosint-Sol	60
22.	Brontuss	60
23.	Mannitol	59
24.	Mannitol 10%	59
25.	Mannitol 15%	59
26.	Mannitol 20%	59
27.	Mannitol 25%	59
28.	Mannitol 5%	59
29.	Bactocill	58
30.	Bricanyl	58
31.	Bromatan	58
32.	Carnitor	58
33.	Contac Cold	58
34.	Nicotrol	58
35.	Bromfenac	57
36.	Procto-Kit	57
37.	Bentasil	56
38.	Bethanechol	56
39.	Bonsity***	56
40.	Brevidil	56
41.	Brintellix	56
42.	Bromocriptine	56
43.	Glucotrol	56
44.	Inositol	56
45.	Surmontil	56

Appendix E: Moderately Similar Names (e.g., combined POCA score is ≥55% to ≤69%) with overlap or numerical similarity in Strength and/or Dose

No.	Proposed name: Bronchitol Established name: mannitol Dosage form: Inhalation Powder Strength(s): 40 mg Usual Dose: 10 capsules (400 mg) twice daily	POCA Score (%)	Prevention of Failure Mode In the conditions outlined below, the following combination of factors, are expected to minimize the risk of confusion between these two names
46.	Dronabinol	68	This name pair has sufficient orthographic and phonetic differences
47.	Proctosol	68	This name pair has sufficient orthographic and phonetic differences
48.	Bronkids	66	This name pair has sufficient orthographic and phonetic differences
49.	Brontex	66	This name pair has sufficient orthographic and phonetic differences
50.	Blincyto	65	This name pair has sufficient orthographic and phonetic differences
51.	Prominol	64	This name pair has sufficient orthographic and phonetic differences
52.	Stromectol	64	This name pair has sufficient orthographic and phonetic differences
53.	Granisol	63	This name pair has sufficient orthographic and phonetic differences
54.	Broncho Saline	62	This name pair has sufficient orthographic and phonetic differences
55.	Bronkaid	62	This name pair has sufficient orthographic and phonetic differences
56.	Proxacol	62	This name pair has sufficient orthographic and phonetic differences
57.	Rocainol	62	This name pair has sufficient orthographic and phonetic differences
58.	Bontril	61	This name pair has sufficient orthographic and phonetic differences
59.	Croton Oil	61	This name pair has sufficient orthographic and phonetic differences
60.	Atropisol	60	This name pair has sufficient orthographic and phonetic differences
61.	Proctosol-Hc	60	This name pair has sufficient orthographic and phonetic differences
62.	Proventil	60	This name pair has sufficient orthographic and phonetic differences
63.	Purinethol	60	This name pair has sufficient orthographic and phonetic differences

No.	Proposed name: Bronchitol Established name: mannitol Dosage form: Inhalation Powder Strength(s): 40 mg Usual Dose: 10 capsules (400 mg) twice daily	POCA Score (%)	Prevention of Failure Mode In the conditions outlined below, the following combination of factors, are expected to minimize the risk of confusion between these two names
64.	Ronoxidil	60	This name pair has sufficient orthographic and phonetic differences
65.	Conceptrol	59	This name pair has sufficient orthographic and phonetic differences
66.	Bromsite	58	This name pair has sufficient orthographic and phonetic differences
67.	Bromspiro	58	This name pair has sufficient orthographic and phonetic differences
68.	Krintafel	58	This name pair has sufficient orthographic and phonetic differences
69.	Trancot	58	This name pair has sufficient orthographic and phonetic differences
70.	Tropicacyl	58	This name pair has sufficient orthographic and phonetic differences
71.	Tri-Vi-Sol	57	This name pair has sufficient orthographic and phonetic differences
72.	Adrenocot L.A.	56	This name pair has sufficient orthographic and phonetic differences
73.	Bionect	56	This name pair has sufficient orthographic and phonetic differences
74.	Breonesin	56	This name pair has sufficient orthographic and phonetic differences
75.	Brioschi	56	This name pair has sufficient orthographic and phonetic differences
76.	Broncomar DM	56	This name pair has sufficient orthographic and phonetic differences
77.	Butisol	56	This name pair has sufficient orthographic and phonetic differences
78.	Clinisol 15	56	This name pair has sufficient orthographic and phonetic differences
79.	Corticool	56	This name pair has sufficient orthographic and phonetic differences
80.	Derma Cidol	56	This name pair has sufficient orthographic and phonetic differences
81.	Dristan Cold	56	This name pair has sufficient orthographic and phonetic differences

No.	Proposed name: Bronchitol Established name: mannitol Dosage form: Inhalation Powder Strength(s): 40 mg Usual Dose: 10 capsules (400 mg) twice daily	POCA Score (%)	Prevention of Failure Mode In the conditions outlined below, the following combination of factors, are expected to minimize the risk of confusion between these two names
82.	Iron Sol	56	This name pair has sufficient orthographic and phonetic differences
83.	Metromidol	56	This name pair has sufficient orthographic and phonetic differences
84.	Pravachol	56	This name pair has sufficient orthographic and phonetic differences
85.	Prednicot	56	This name pair has sufficient orthographic and phonetic differences
86.	Procrit	56	This name pair has sufficient orthographic and phonetic differences
87.	Proctocort	56	This name pair has sufficient orthographic and phonetic differences
88.	Pronto	56	This name pair has sufficient orthographic and phonetic differences
89.	Revitol	56	This name pair has sufficient orthographic and phonetic differences
90.	Robinul	56	This name pair has sufficient orthographic and phonetic differences
91.	Trecator	56	This name pair has sufficient orthographic and phonetic differences
92.	Bergamot Oil	55	This name pair has sufficient orthographic and phonetic differences
93.	Panthenol	55	This name pair has sufficient orthographic and phonetic differences
94.	Nitrol	52	This name pair has sufficient orthographic and phonetic differences

Appendix F: Low Similarity Names (e.g., combined POCA score is ≤54%)

No.	Name	POCA Score (%)
95.	Monarch Io-Bloc	53
96.	2-Bromo-2-Nitroethanol	52
97.	Ricinoleth-40	51
98.	Citrolith	46

Appendix G: Names not likely to be confused or not used in usual practice settings for the reasons described.

No.	Name	POCA Score (%)	Failure preventions
99.	Bromphenyl	68	Product is discontinued with no generics available
100.	Bronitin	68	Product is discontinued with no generics available
101.	Broncotron-D	68	Product is discontinued with no generics available
102.	Droncit	68	Product is a veterinary drug product
103.	(b) (4) ***	68	Proposed proprietary name for NDA 022499 and 022500, which was found unacceptable under OSE RCM 2009-1526. Product was approved under the established name clonidine and is now discontinued.
104.	Uni Bronchial	68	Product is discontinued with no generics available
105.	Blancophor R	66	Name identified by Rx Norm. Unable to find product characteristics in commonly used drug databases.
106.	Brexidol	66	Foreign drug product not available in the U.S.
107.	Brompheril	66	Product is discontinued with no generics available
108.	Broxil	66	Foreign drug product not available in the U.S.
109.	Broncotron-P	66	Name identified by Rx Norm. Unable to find product characteristics in commonly used drug databases
110.	Mitobronitol	65	Product classified as a brominated analog of mannitol and identified by Rx Norm. Unable to find product characteristics in commonly used drug databases.
111.	Broncholate	64	Product is discontinued with no generics available
112.	Drontal	64	Product is a veterinary drug product
113.	Bromhist NR	62	Product is discontinued with no generics available
114.	Conacetol	62	Name identified in Rx Norm database. Unable to find product characteristics in commonly used drug databases.
115.	Probucol	62	Product is discontinued with no generics available
116.	Procaterol	62	Foreign drug product not available in the U.S.
117.	Prondol	62	Foreign drug product not available in the U.S.
118.	Brom-A-Cot	61	Name identified in Rx Norm database. Unable to find product characteristics in commonly used drug databases.
119.	Boron Citrate	60	Product is a compounding powder

No.	Name	POCA Score (%)	Failure preventions
120.	Bromanyl	60	Product is discontinued with no generics available
121.	Bromates	60	Product is a chemical compound with bromine-based oxoanions not a separate drug product.
122.	Bronkolixir	60	Product is discontinued with no generics available
123.	Bronkometer	60	Product is discontinued with no generics available
124.	Bron-Tuss	60	Name identified in Rx Norm database. Unable to find product characteristics in commonly used drug databases.
125.	Brotizolam	60	Foreign drug product not available in the U.S.
126.	Coro-Nitro	60	Foreign drug product not available in the U.S.
127.	Percutol	60	Foreign drug product not available in the U.S.
128.	Sorbitol	60	Product is a sugar alcohol not available as a drug product
129.	Triphenicol	60	Product is discontinued with no generics available
130.	Xanthinol	60	Foreign drug product not available in the U.S.
131.	3-Bromocamphor, (+-)-	59	Foreign drug product not available in the U.S.
132.	Bretylol	59	Product is discontinued with no generics available
133.	Lactitol	59	Product is a sugar alcohol not available as a drug product
134.	Limbitrol	59	Product is discontinued with no generics available
135.	Practolol	59	Product is discontinued with no generics available
136.	Pridinol	59	Foreign drug product not available in the U.S.
137.	1-Propanol	58	Product is a primary alcohol not available as a drug product
138.	Ambroxol	58	Product is use a bulk product used in veterinary compounding
139.	Bakuchiol	58	Product is an antioxidant found in certain skin care products but not available independently as a drug product
140.	Barbital	58	Product is discontinued with no generics available
141.	Borneol	58	Product is a perfume making terpenes, not a drug product
142.	Bromatapp	58	Product is discontinued with no generics available
143.	Bromcomp	58	Product is discontinued with no generics available
144.	Bromtapp	58	Product is discontinued with no generics available
145.	Clobutinol	58	Product is discontinued with no generics available
146.	Clofoctol	58	Foreign drug product not available in the U.S.

No.	Name	POCA Score (%)	Failure preventions
147.	Dioctocal	58	Name identified in Rx Norm database. Unable to find product characteristics in commonly used drug databases.
148.	Eprozinol	58	Foreign drug product not available in the U.S.
149.	Labrocol	58	Foreign drug product not available in the U.S.
150.	Prednesol	58	Foreign drug product not available in the U.S.
151.	Prohist LQ	58	Name identified in Rx Norm database. Unable to find product characteristics in commonly used drug databases.
152.	Rhodinol	58	Product is a monoterpene alcohol that occurs naturally in geranium and citronella oils to perfume cosmetics and oils, it is not a drug product
153.	Tricosal	58	Product is discontinued with no generics available
154.	Arachis Oil	57	Product is another name for peanut oil, not a drug product
155.	Boron Nitride	57	Product is a heat and chemically resistant refractory compound, not a drug product
156.	Branchamin	57	Product is discontinued with no generics available
157.	Branchamin 4%	57	Product is discontinued with no generics available
158.	Lentizol	57	Foreign drug product not available in the U.S.
159.	Mintezol	57	Product is discontinued with no generics available
160.	Promectin	57	Product is a veterinary drug product
161.	Rectasol	57	Product is discontinued with no generics available
162.	Vontrol	57	Product is discontinued with no generics available
163.	Antrocol	56	Product is discontinued with no generics available
164.	Benperidol	56	Foreign drug product not available in the U.S.
165.	Bravecto	56	Product is a veterinary drug product
166.	Brazil Nut Oil	56	Product is used in various skin care products, not a drug product
167.	Brom Tann PE	56	Product is discontinued with no generics available
168.	Bromfed	56	Product is discontinued with no generics available
169.	Bromfed SR	56	Name identified in Rx Norm database. Unable to find product characteristics in commonly used drug databases.
170.	Bromfenex	56	Product is discontinued with no generics available
171.	Bromphen DC	56	Product is discontinued with no generics available
172.	Bronitin Mist	56	Product is discontinued with no generics available
173.	(b) (4) ***	56	Name found conditionally acceptable ((b) (4)) in OSE RCM (b) (4), however the application was withdrawn by the Applicant

No.	Name	POCA Score (%)	Failure preventions
174.	Clostebol	56	Foreign drug product not available in the U.S.
175.	Iron Carbonyl	56	Product is discontinued with no generics available
176.	Pentasol	56	Foreign drug product not available in the U.S.
177.	Pro-Tec Gold	56	Name identified in Rx Norm database. Unable to find product characteristics in commonly used drug databases.
178.	Probeta LA	56	Name identified in Rx Norm database. Unable to find product characteristics in commonly used drug databases.
179.	Proctosol HCR	56	Name identified in Rx Norm database. Unable to find product characteristics in commonly used drug databases.
180.	Pronol	56	Foreign drug product not available in the U.S.
181.	Propicillin	56	Foreign drug product not available in the U.S.
182.	Reconcile	56	Product is a veterinary drug product
183.	Rimiterol	56	Foreign drug product not available in the U.S.
184.	Rondec-TR	56	Product is discontinued with no generics available
185.	Roxanol	56	Product is discontinued with no generics available
186.	Tilbroquinol	56	Foreign drug product not available in the U.S.
187.	Tiratricol	56	Foreign drug product not available in the U.S.
188.	Trobicin	56	Product is discontinued with no generics available
189.	Baratol	55	Foreign drug product not available in the U.S.
190.	Bromaphen	55	Name identified in Rx Norm database. Unable to find product characteristics in commonly used drug databases.
191.	Bromatapp SR	55	Product is discontinued with no generics available
192.	Bromphen Time	55	Name identified in Rx Norm database. Unable to find product characteristics in commonly used drug databases.
193.	Bromphenex	55	Name identified in Rx Norm database. Unable to find product characteristics in commonly used drug databases.
194.	Bronkaid Mist	55	Product is discontinued with no generics available
195.	Dormonoct	55	Foreign drug product not available in the U.S.
196.	Frenadol	55	Product is discontinued with no generics available
197.	Morantel	55	Product is a veterinary drug product
198.	Pentothal	55	Product is discontinued with no generics available
199.	Pri-Andriol	55	Product is discontinued with no generics available
200.	Proguanil	55	Product is available as Atovaquone-Proguanil not as a separate drug product

Appendix H: Names not likely to be confused due to absence of attributes that are known to cause name confusion[h].-N/A

[h] Shah, M, Merchant, L, Chan, I, and Taylor, K. Characteristics That May Help in the Identification of Potentially Confusing Proprietary Drug Names. Therapeutic Innovation & Regulatory Science, September 2016

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