

**Methods/Research · Educational evidence summary**

Reconciling duplicate medication identities across anticholinergic scales

This methods article addresses reconciling duplicate medication identities across anticholinergic scales.

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Abstract

Duplicate medication labels can distort counts and comparisons, but overly broad merging can erase important distinctions. This methods article proposes an auditable identity-reconciliation process and examines the identity fields already present in UnifiedACB's public data. The approach distinguishes search aliases, normalized concepts, literal source labels, and clinically meaningful product differences. It requires evidence before merging salts, stereoisomers, combinations, or route-specific records, and preserves unresolved matches rather than forcing a decision. The present work does not perform a new medication adjudication, renumber concepts, or alter any source value. Its verified observation is structural: the released dataset retains concept identifiers, aliases, literal observation labels, and identity-status information. The proposed output of future reconciliation is a documented mapping decision with its source basis and effect on counts. No new duplicate count or pharmacologic equivalence is asserted. The goal is reproducible identity handling without sacrificing the provenance of the evidence.

Introduction

Two medication names may be synonyms, spelling variants, different forms of an ingredient, or genuinely different products. A source comparison cannot be interpreted until that relationship is understood. An apparent disagreement may disappear after a valid identity match, while an apparent agreement may be false if unlike products were merged.

The objective is to describe a process that protects against both under-merging and over-merging. The problem is not solved by making the names look similar. Identity is a scientific and documentation decision that must precede comparison of source values.

Methods

The completed inspection for this article examined the current public dataset's concept and observation fields. It did not adjudicate new pairs or change the identity map. The proposed



reconciliation workflow below is intended for a future authorized review and should be distinguished from actions already completed in the released dataset.

First, preserve the raw labels exactly. Keep the source document, locator, version, and any route or formulation qualification attached to each observation. A normalized label can be added for search, but the original text should remain available for verification. Without it, a later reviewer cannot reconstruct what was merged.

Second, classify the candidate relationship before deciding. Potential categories include capitalization or punctuation variation, a verified synonym, a brand-to-ingredient relation, an ingredient form, a stereoisomer, a combination, a route-specific product, or an unresolved resemblance. These categories guide review; they do not themselves prove equivalence.

Third, obtain the evidence appropriate to the relationship. A lexical rule may support case normalization, while a clinical identity decision may require a product label, authoritative terminology source, or explicit source statement. Similar spelling alone should not merge medicines with potentially different ingredients or formulations. A combination should not be flattened into a single component without preserving the source's meaning.

Fourth, record the decision separately from the observations. A mapping record should identify the candidate labels, the conclusion, supporting evidence, reviewer status, date, and unresolved limitations. If a merge or split affects identifiers or routes, a migration plan should preserve historical references and explain the change rather than silently replacing the old identity.

Fifth, verify the consequences. Compare literal-row counts, normalized-concept counts, observation counts, and affected links. A reduction in concept count may be appropriate after a confirmed duplicate merge, but it is not proof that no evidence was lost. Every original observation and locator should still be traceable after the mapping decision.

Finally, rerun source comparisons using the approved identity layer while preserving an audit of unresolved records. Do not infer agreement by merging the pair whose scores are closest, and do not infer distinct identity merely because sources disagree. The classification values should not determine the identity decision they depend on.

Results

The current public dataset retains preferred concept labels and aliases, while each observation keeps its literal source label and identity status. A simple example is the acarbose concept, whose aliases include capitalization variants and whose observations preserve source-specific labeling. [UnifiedACB public evidence dataset, v3.0 RC12 final](#)

That structural example demonstrates that search normalization and source fidelity can coexist. It does not establish that every alias has undergone a new clinical review in this editorial pass. Some records explicitly describe lexical identity scope, which should not be relabeled as complete product equivalence.

No new duplicate pairs, mergers, splits, or medication identifiers were created for this article. No count of newly resolved identities is reported. The result is an inspected representation and a proposed review method, not a fresh adjudication dataset.



Discussion

The greatest risk of under-merging is false duplication: the same medicine may be counted twice or appear to be absent from a source under an unrecognized synonym. The greatest risk of over-merging is false equivalence: a qualifier, component, or product distinction may be lost. Both can affect exposure summaries and source-agreement analyses.

Search tools often need to be more permissive than evidence matching. A suggestion can offer a likely candidate from an incomplete query, while the final record still requires confirmation of the exact product. That distinction should remain visible in interface behavior. Convenience in discovery should not silently become certainty in scientific interpretation.

Identity decisions also interact with missingness. A failed match may reflect an unresolved label rather than a true absence from the source. Conversely, forcing a match can manufacture a value for a medicine the source did not list. The output should distinguish “unresolved identity” from “verified identity, no observation in this source.”

Version control is necessary because a later identity decision can change apparent coverage without changing any source-native value. Historical analyses should retain the mapping version used. A release note should explain whether a change affected search aliases, concept structure, public routes, or observation assignment, rather than describe every identity correction as a score update.

The evidence model should preserve dissent or uncertainty when sources remain ambiguous. A documented unresolved pair is preferable to a confident but unsupported merge. Future reviewers can revisit it when better information becomes available without losing the original labels or the reason the earlier decision was limited.

Limitations

This article does not supply a comprehensive chemical-identity ontology or adjudicate all possible salts, stereoisomers, or brand names. The appropriate level of grouping depends on the source statement and intended use. A valid ingredient-level relationship may still be insufficient for a product-specific clinical inference.

The current inspection establishes the presence of traceable fields, not universal correctness of every mapping. A full review requires source-specific evidence and appropriate expertise. Even a successful identity audit would improve data fidelity without independently validating a clinical risk prediction or treatment rule.

Conclusion

Resolve identity using evidence that is independent of the source values being compared. Preserve raw labels, qualifiers, and historical mapping decisions, and leave uncertain relationships explicit. That process supports useful normalization while preventing apparent duplicate cleanup from erasing scientific distinctions.



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Disclosure

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