

339 MILLION DRUG DISPENSATIONS MAPPED: FROM NORDIC DRUG PRODUCT IDENTIFIERS TO CLINICAL DRUGS WITH 99.6% COVERAGE



Enhancing Multinational Drug Safety Studies:

Mapping the Nordic Drug Product Identifiers (Varenummer) to the OMOP Standard

Background: In Norwegian prescribing data, drugs are uniquely identified by Drug Product Identifier (Varenummer) codes. Accurate mapping of these local identifiers to standardized **OMOP drug concepts** is essential for harmonizing prescribing data and enabling multinational pharmacoepidemiologic research. We therefore mapped Nordic Varenummer codes to OMOP drug concepts using **RxNorm** and **RxNorm Extension**, combining **automated mapping** with targeted **manual refinement** to achieve high-quality, high-granularity mappings.

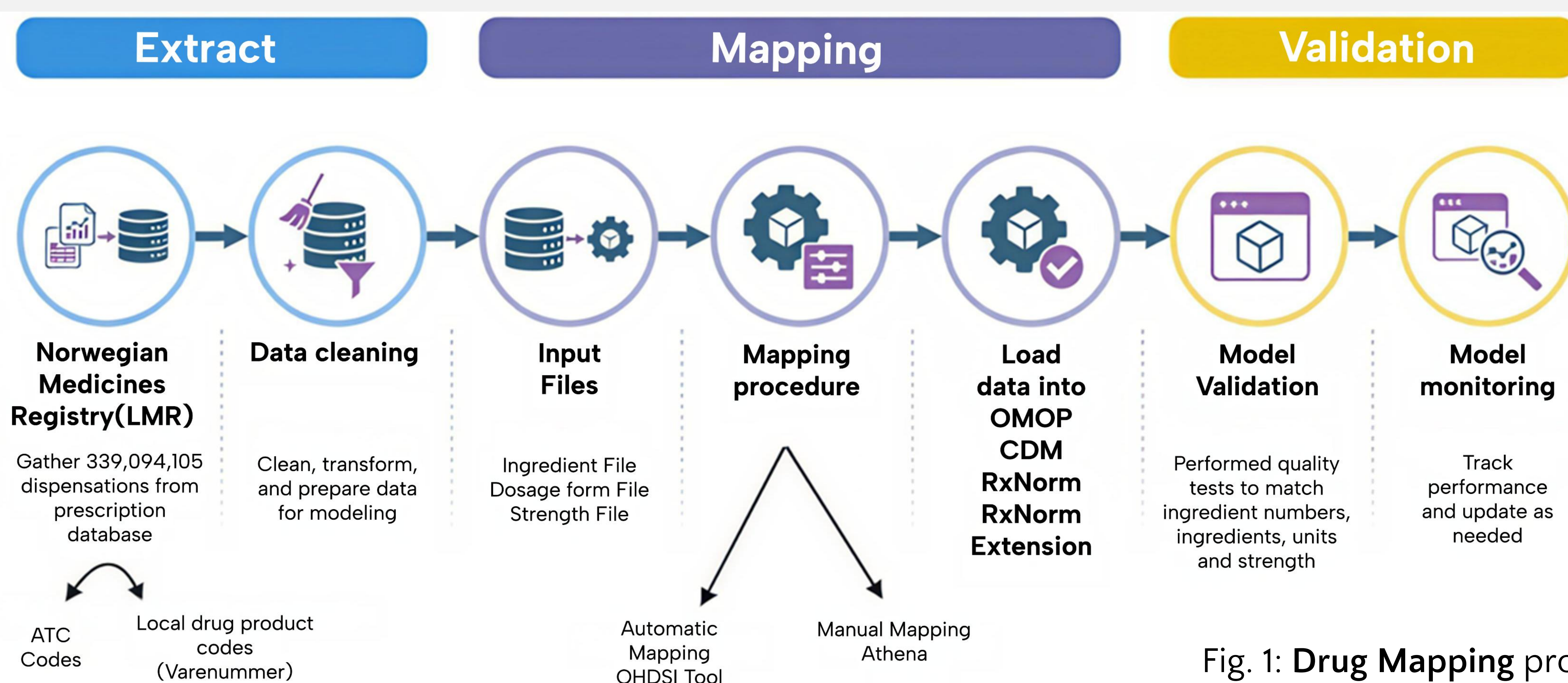


Fig. 1: Drug Mapping procedure

Quality checks assessed concordance in i) ingredient identity, ii) ingredient count, and iii) strength/unit representation between the source registry and OMOP vocabularies, with identified **discrepancies reviewed and corrected** as needed.

Challenges: Initial automated mapping assigned 64% of prescriptions to the **Clinical Drug level** and 25% to the **Clinical Drug Form level**, leaving 11% requiring manual refinement. More than half of these unmapped products (55%) were **combination drugs** that could not be linked automatically to a single **RxNorm ingredient**. Additional challenges included synonymous dose forms, unit normalization, strength conversion, and duplicate mappings.

Fig. 2: Examples of input data. Example 1 mapped automatically, example 2 required manual adjustment.

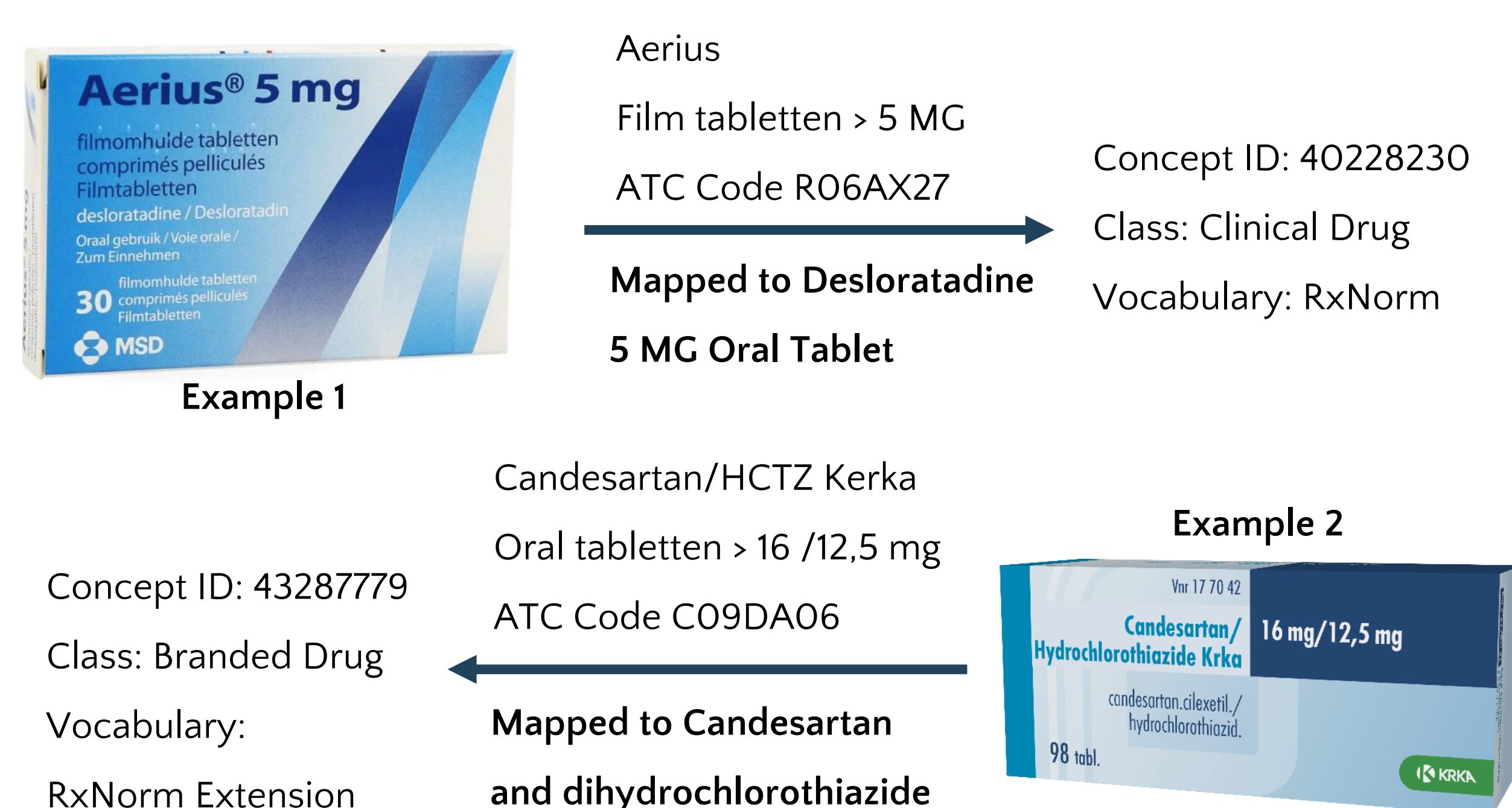
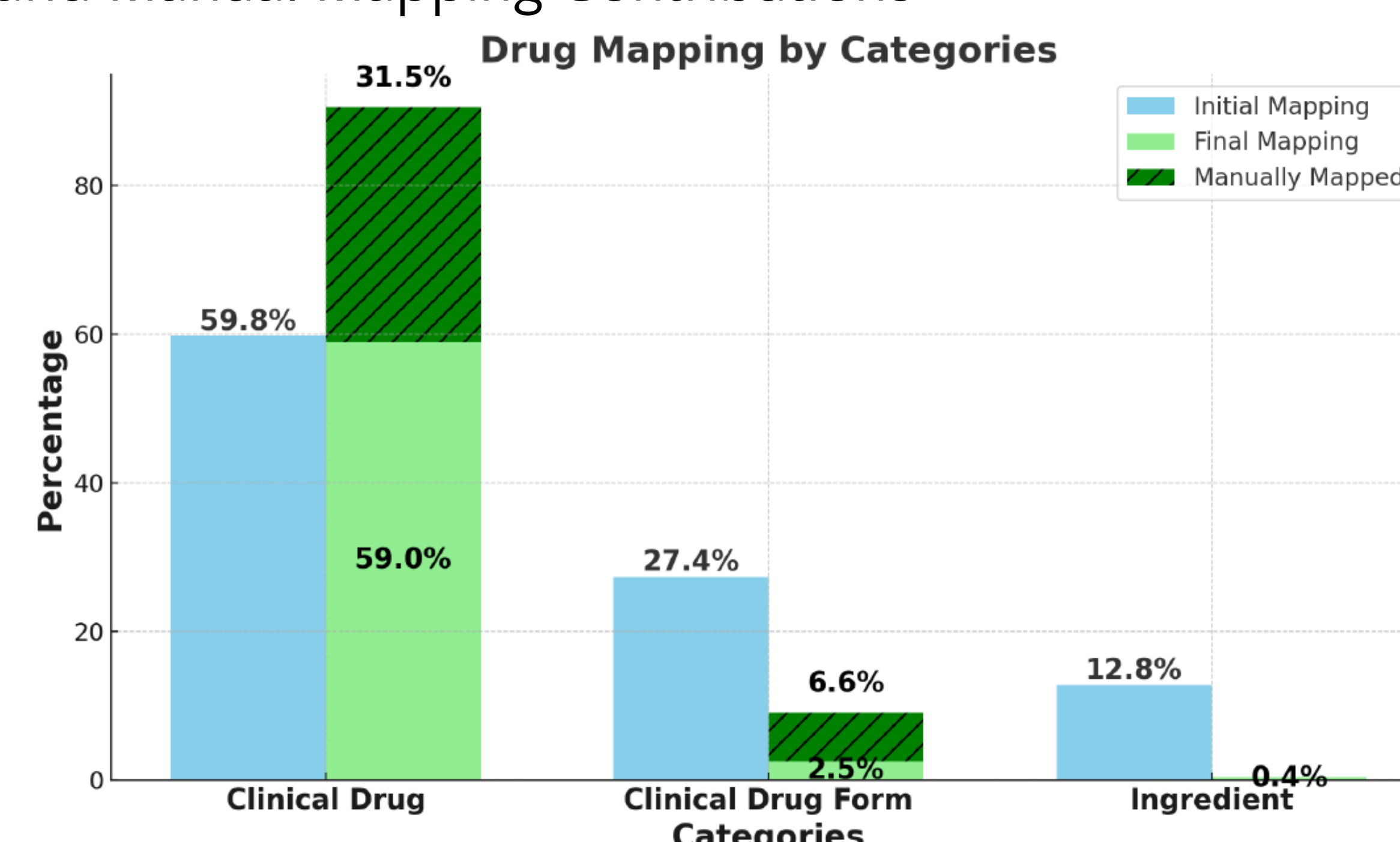


Fig. 3: Drug Mapping results by categories: Automated Initial Mapping, Final Mapping After Manual Refinement, and Manual Mapping Contributions



Results: Harmonizing **Nordic drug coding** systems to the OMOP CDM is feasible using **automated mapping** with **targeted manual refinement**, enabling interoperable pharmacoepidemiologic research. **Quality checks** identified less than 2% of drug mappings that required further attention. The **99.6%** mapping rate demonstrates that **Norwegian drug data** can be mapped to OMOP **standard vocabularies** with high completeness. Remaining limitations mainly reflect ingredient combinations and incomplete source product detail.

