



DoD/VA Allergen Terminology Usage Analysis

Findings and Recommendations

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DoD/VA Interagency Program Office (IPO)



DoD/VA IPO Project Goals



- **Develop a Single List of Most Common Allergen Terms from DoD and VA**
 - prompted by a discussion in Patient Care WG a couple of WGM's ago
- **Improve correlation of Allergen data across departments**
 - used for incorporation into receiving department's EHR for drug checking
- **Share common Allergen lists for possible**
 - usability improvements
 - minimum supported subset for testing
- **Investigate if there is a way to improve the HL7 Allergen multiple terminology issues**
 - RxNorm + NDF-RT + SNOMED + UNII



Outputs



- **A DoD/VA Most Common Allergen lists**
 - Top (10/95%/100% etc.) med allergens recorded
 - Top med classes recorded
 - Top non-medication allergens (food, contact, etc.) recorded
- **Recommendations about narrowing the Allergen (aka Substance Reactant) Vocabulary lists for usability and relevance**
 - At least as a minimally supported subset and/or test set
 - Reduces the functional duplicates and noise



DoD and VA Healthcare Overview



- **Approximately 18 million patients**
 - Active Duty Military & Reserves
 - Spouses, children and other dependents
 - Military Separates and Retirees → Veterans
- **Approximately 85,000 providers**
 - All specialties/subspecialties
 - All provider types/levels
- **All US regions, states, major cities, rural areas, and some overseas care**
- **Nearly all settings of care**
 - 215 medical centers, 2,200 outpatient clinics, dental clinics, community living centers, Vet Centers and Domiciliaries



Current C-CDA Substance-Reactant Value Set



- **RxNorm (active medication terms) 117,707**
- **NDF-RT (med classes) 1,178**
- **SNOMED CT (food allergens) >590**
- **SNOMED CT non-drug, non food 1,000s**
- **UNII 73,068**
 - pollen, occupational, contact, insect, microorganism, etc.

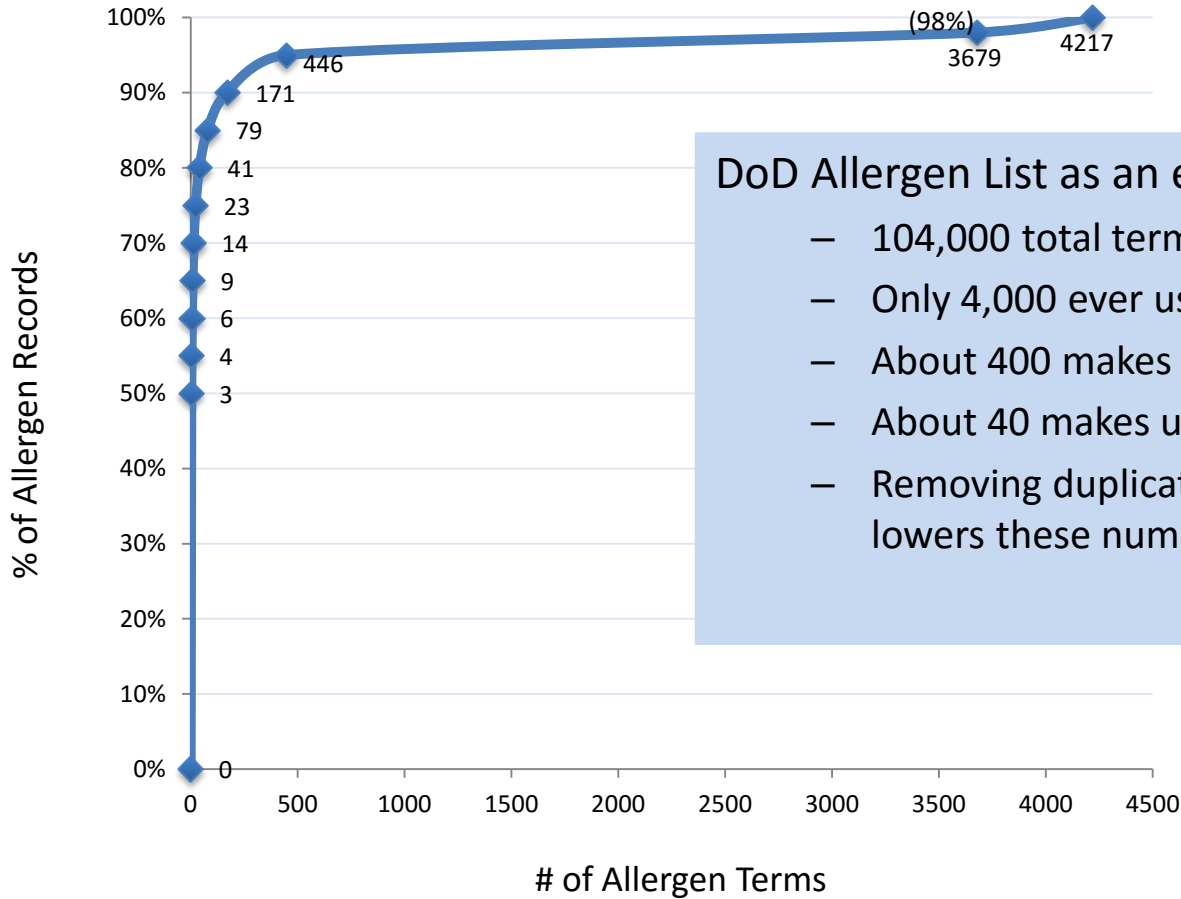
- **Nearly 200,000 terms overall**
- **Overlaps and duplicates across all**
- **No single allergen list to download**



Lots of Terms, But Few Used



The Pareto Principle (80-20 rule) applies
98% of the use of terms is covered by 2% of the terms



DoD Allergen List as an example:

- 104,000 total terms
- Only 4,000 ever used
- About 400 makes up 95%
- About 40 makes up 80%
- Removing duplicates (exact or functional) lowers these numbers even further



DoD & VA Allergen lists



- **DoD Allergen List**

- 103,862 terms

- <4000 have ever been used
- Medication terms at multiple different levels
 - equivalent to multiple RxNorm term types (IN,MIN,PIN, SBD, BPCCK, SBD, SBDF, SCD, SCDC, SCDF, SCDG)
- Lots of exact duplicates, even more functional duplicates
 - ~75,000 with exact duplicates removed
- Very few medication classes used (57)
 - Top 8 classes = 95% of use

- **VA Allergen List**

- 7,628 terms

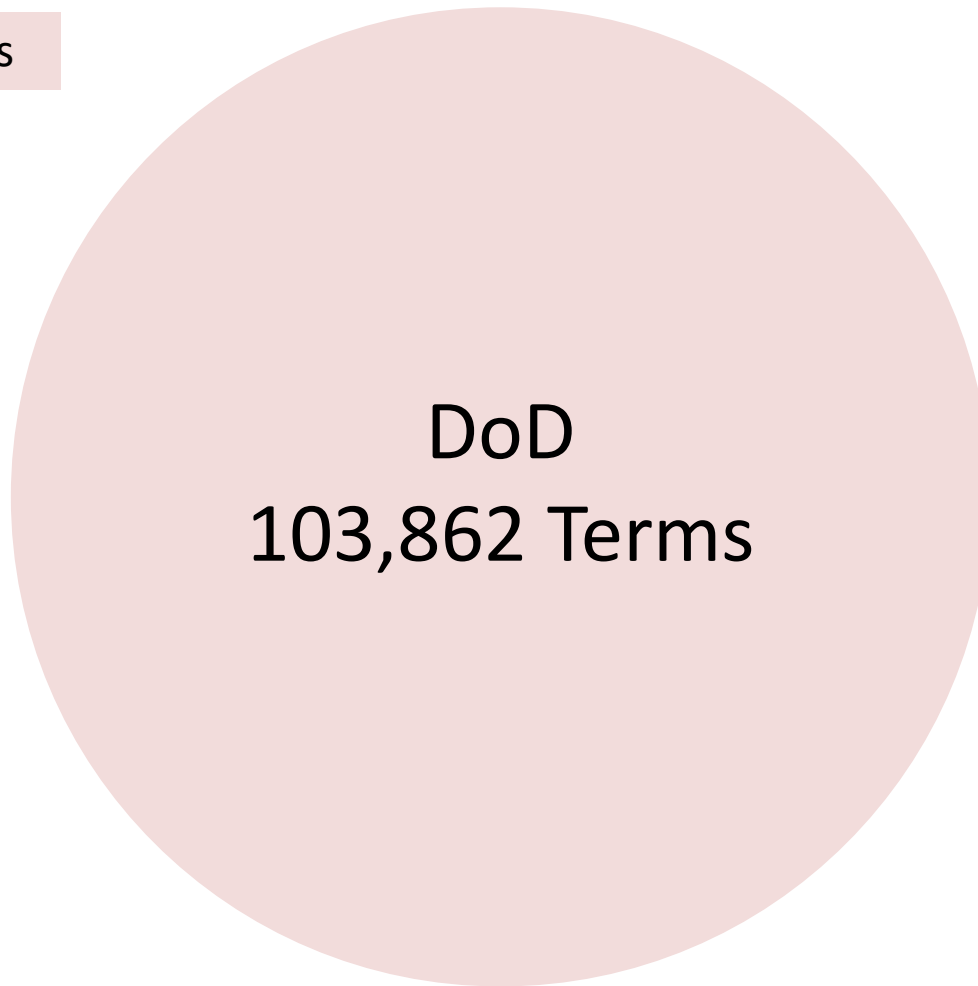
- With lots of duplicates (~2,100)
- Almost all med terms are Ingredient level (RxNorm TTY= IN, MIN)
- Only ~2000 unique terms are used
 - 1738 meds, 18 classes, 300 non-meds (213 UNIIIs, 86 SCT)



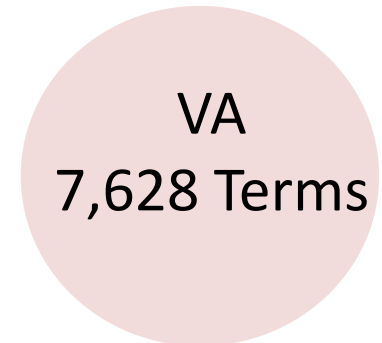
DoD and VA Allergen List Correlation



Local Terms



No Correlation Natively





Correlation mapped through RxNorm



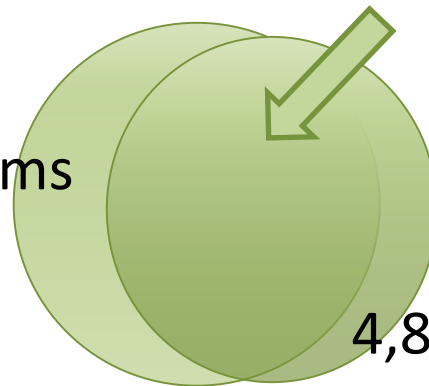
Local Terms



RxNorm

Correlation of local terms
using maps to RxNorm
~60% of all terms
~70% of used terms
~85% by volume of use

DoD
5,542 Terms



VA
4,838 Terms



Correlation mapped through RxNorm Active Ingredient Terms (TTY=IN,MIN)



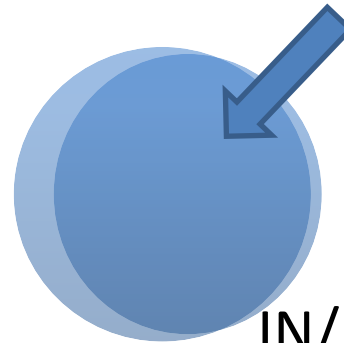
IN,MIN,PIN,
SBD, BPCK,
SBD, SBDF,
SCD, SCDC,
SCDF, SCDG



IN,MIN

Correlation of local terms using mappings to only RxNorm IN/MIN
~70% of all terms
~85% of used terms
~98% by volume of use

DoD
3,809
IN/MIN Terms



VA
3,592
IN/MIN Terms



Findings



RxNorm Active Ingredient Terms



- **RxNorm includes 14,721 Active Ingredient level (IN, MIN) terms**
- **We propose that this is the functionally relevant level for recording & sharing Medication Allergens**
 - In practice, clinicians can't/don't distinguish between
 - Brand vs. Generic
 - (pharmacists routinely dispense generic even when brand name used in Rx)
 - Dose differences
 - Form
 - Salt (TTY= PIN)
 - Different fillers used
 - These distinctions are essentially noise for allergen recording purposes
 - (Displays might choose to include a brand name for recognition)



Allergen Classes



- NDF-RT classes 1,178

BUT....

- DoD VA Combined Usage includes just 45
- 99% of usage 19
- 90% of usage 4



Non-Drug Allergens (food, insect, contact, etc)



- **Currently a mix of SNOMED and UNII codes (263) were required to cover total usage**
- **SNOMED generally appears to have the right level of coverage, but doesn't include all usage**
- **UNII has broad coverage, but incredible level of detail for Allergen recording purposes**
 - Example: 162 terms with “fish” in it, including 28 species of rockfish



of terms per coverage % per terminology



Terminology	90%	95%	99%	100%
RxNorm IN/MIN (medications)	213	477	834	2,101
NDF-RT (drug classes)	4	7	19	45
SNOMED/UNII (food, insect, contact, etc.)	65	101	175	263



Considerations



- **Recommend sharing medications at ingredient level (e.g. RxNorm IN/MIN terms)**
 - At least as a minimum supported subset
- **Recommend focusing on our short Class list**
 - At least as a minimum supported subset
- **Recommend submitting any missing non-medication Allergen concepts that are in UNII only to SNOMED CT, then...**
- **Recommend removing UNII from the Allergen Value set**