The WHO Drug Dictionary Types, Formats and Loading Considerations in TMS

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Acknowledgements and Introductions

• Many thanks to the OCUG for opportunity to present a tutorial related to the WHO Drug Dictionary Types and Formats.
• Many thanks to Carl Huddénius and Daniel von Sydow of the World Health Organization, Uppsala Monitoring Centre.
• Many thanks to the audience members for attending.
Assumptions/Scope/Disclaimer

- Assumption: Audience has a basic understanding of WHODrug Dictionary
- Scope: OC 4.0.x to OC 4.5.x.
- Disclaimer: The samples provided in these scripts are for demonstration purposes only. No part of the content of this presentation should construed for fitness to a particular purpose or a warranty of any kind.
Agenda

• Part I: Overview, Content and Usefulness of the WHO Drug Dictionary Types
  • WHODD
  • WHODDE
  • Combined Files of WHODDE and WHOHD
• Part II: Overview of the WHODrug Formats
  • B2 Format and C Format
  • Uses of C Format
  • Differences between B2 and C Format
• Part III: Loading and Updating the B2 and C Formats into TMS
  • The ATC Derivation Problem and Options in TMS
  • C Format Loading Considerations in TMS
  • Update Considerations for B2 Drug Code
  • SDQ Loading
Part I: Overview, Content of the WHODrug Dictionaries
Dictionary Type/Format

• Dictionary Types
  – WHO Drug Dictionary (WHO DD)
  – WHO Drug Dictionary Enhanced (WHO DDE)
  – WHO Drug Dictionary Enhanced extended with the Herbal Dictionary (WHO DDE+HD)

• Dictionary Formats
  – B-2 Format
  – C Format
No of B Format entries per Dictionary Type

- DD
- DDE
- DDE + HD

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No of C Format entries per Dictionary Type
Part II: Overview of the WHODrug Formats
Dictionary Formats

- The WHO Drug Dictionaries are available in different formats: B-2 and C
- The formats are data-files, with pre-defined data-fields and relationships between the tables
- The data-files are loaded into TMS
The Dictionary Formats

- The B-2 Format dictionary is a dictionary of Drug Codes (drug names and their corresponding ingredient etc.)

- Drug Code
  - Ingredient(-s)
  - Salt(-s)
  - Names

- The C Format dictionary is a dictionary of Medicinal Products

- Medicinal Product ID
  - A unique combination of
    - Drug Code
    - Name
    - Name Specifier
    - Country
    - Marketing Authorisation Holder
    - Strength
    - Dosage form
B and C Formats

- The B format is a dictionary of product names
  - Unique identifier – Drug Code (B-2)
- The C format is a dictionary of medicinal products. Each drug name can appear many times – e.g. in different forms and countries
  - Unique identifier – Medicinal Product ID
  - Drug Code is also included
  - Code with higher precision
  - Understand the difference between drugs with similar drug names
## B-2 View

**User:** carl.huddenius@who-umc.org  
**Organisation:** the UMC Products & Services  
**Version:** June 1, 2009  
**Dictionary:** WHODDE, WHOHD  
**Date:** Fri, Aug 21, 2009  
**Time:** GMT: 09:24

### Search: Product Name like alvedon

- **Number of rows:** 2 (DDE, HD: 2)

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Drug Code</th>
<th>Ingredient(s)</th>
<th>Generic</th>
<th>Preferred</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alvedon</td>
<td>00020001004</td>
<td>Paracetamol</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alvedon dos</td>
<td>00020001337</td>
<td>Paracetamol</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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## C View

<table>
<thead>
<tr>
<th>MP_ID</th>
<th>Drug Code</th>
<th>Product Name</th>
<th>Name specifier</th>
<th>Pharmaceutical form</th>
<th>Strength</th>
<th>Country</th>
<th>MAH</th>
<th>Generic</th>
<th>Preferred</th>
</tr>
</thead>
<tbody>
<tr>
<td>1156070</td>
<td>00020001004</td>
<td>Alvedon</td>
<td></td>
<td>TABLETS</td>
<td>500 mg</td>
<td>Sweden</td>
<td>AstraZeneca AB</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1156071</td>
<td>00020001004</td>
<td>Alvedon</td>
<td></td>
<td>TABLETS</td>
<td>Unspecified</td>
<td>Sweden</td>
<td>AstraZeneca AB</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1156072</td>
<td>00020001004</td>
<td>Alvedon</td>
<td></td>
<td>Unspecified</td>
<td>Unspecified</td>
<td>Sweden</td>
<td>AstraZeneca AB</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1224867</td>
<td>00020001004</td>
<td>Alvedon</td>
<td></td>
<td>Unspecified</td>
<td>Unspecified</td>
<td>Sweden</td>
<td>Not specified</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1286550</td>
<td>00020001004</td>
<td>Alvedon</td>
<td></td>
<td>Unspecified</td>
<td>Unspecified</td>
<td>United Kingdom</td>
<td>Not specified</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1440892</td>
<td>00020001004</td>
<td>Alvedon</td>
<td></td>
<td>Unspecified</td>
<td>Unspecified</td>
<td>Philippines</td>
<td>Not specified</td>
<td></td>
<td></td>
</tr>
<tr>
<td>188671</td>
<td>00020001004</td>
<td>Alvedon</td>
<td></td>
<td>SUPPOSITORIES, PAEDIATRIC</td>
<td>Unspecified</td>
<td>United Kingdom</td>
<td>Novex pharma</td>
<td></td>
<td></td>
</tr>
<tr>
<td>188672</td>
<td>00020001004</td>
<td>Alvedon</td>
<td></td>
<td>Unspecified</td>
<td>Unspecified</td>
<td>United Kingdom</td>
<td>Novex pharma</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4765</td>
<td>00020001004</td>
<td>Alvedon</td>
<td></td>
<td>Unspecified</td>
<td>Unspecified</td>
<td>Sweden</td>
<td>Draco ab</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4967</td>
<td>00020001004</td>
<td>Alvedon</td>
<td>Forte</td>
<td>Unspecified</td>
<td>Unspecified</td>
<td>Sweden</td>
<td>Astra pharmaceutical products, inc.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>807830</td>
<td>00020001004</td>
<td>Alvedon</td>
<td></td>
<td>TABLETS</td>
<td>Unspecified</td>
<td>Philippines</td>
<td>Multicare pharm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>807831</td>
<td>00020001004</td>
<td>Alvedon</td>
<td></td>
<td>Unspecified</td>
<td>Unspecified</td>
<td>Philippines</td>
<td>Multicare pharm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>812839</td>
<td>00020001004</td>
<td>Alvedon</td>
<td></td>
<td>LIQUIDS</td>
<td>Unspecified</td>
<td>Philippines</td>
<td>Multicare pharm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>87552</td>
<td>00020001004</td>
<td>Alvedon</td>
<td></td>
<td>Unspecified</td>
<td>Unspecified</td>
<td>Unspecified</td>
<td>Not specified</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Non-unique Names

- Some drug names can mean many things – the names can be used in different countries or forms with different active ingredients.
- In the B-2 format the Drug Record number and Sequence number 1 is added to the drug name – to make it unique.
- In the C format entries have additional data fields.
Non-unique Name, B-2 Format

ACTRON /00020001/
ACTRON /00109201/
ACTRON /00321701/
ACTRON /00391201/
ACTRON /00391201/
ACTRON /00727101/
## Non-unique Name, C Format

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Actron</th>
<th>Actron</th>
<th>Actron</th>
<th>Actron</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drug Code</td>
<td>00020001158</td>
<td>00109201461</td>
<td>00321701053</td>
<td>000391201026</td>
</tr>
<tr>
<td>Name specifier(s)</td>
<td>500</td>
<td>old form</td>
<td>old form</td>
<td>old form</td>
</tr>
<tr>
<td>Active Ingredient(s)</td>
<td>Paracetamol</td>
<td>Ibuprofen</td>
<td>Ketoprofen</td>
<td>Acetylsalicylic acid</td>
</tr>
<tr>
<td>Preferred base name</td>
<td>Paracetamol</td>
<td>Ibuprofen</td>
<td>Ketoprofen</td>
<td>Thomapyrin</td>
</tr>
<tr>
<td>Preferred salt name</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Generic Preferred</td>
<td></td>
<td></td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>ATC code(s)</td>
<td>N02BE Anilides official</td>
<td>M01AE Propionic acid derivatives official</td>
<td>M02AA Antiinfl. prep., non-steroids for topical use official</td>
<td>N02BE Anilides</td>
</tr>
<tr>
<td>MAH(s)</td>
<td>Bayer</td>
<td>Bayer</td>
<td>Bayer</td>
<td>Bayer</td>
</tr>
<tr>
<td>Countries</td>
<td>Spain Venezuela</td>
<td>Argentina Chile Mexico Uruguay</td>
<td>United States</td>
<td>France United Kingdom Spain</td>
</tr>
<tr>
<td>Pharmaceutical form(s)</td>
<td>COATED TABLETS LIQUIDS, DROPS LIQUIDS, SYRUPS TABLETS</td>
<td>CAPSULES LIQUIDS, SUSPENSIONS</td>
<td>COATED TABLETS, FILM TABLETS</td>
<td></td>
</tr>
<tr>
<td>Strength(s)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medicinal Product ID(s)</td>
<td>±</td>
<td>±</td>
<td>±</td>
<td>±</td>
</tr>
</tbody>
</table>
Why SDQs/The purpose of SDQs

Standardized Drug Queries (SDQs)

• Lists of drugs of special interest
  – Facilitate analysis
  – Monitoring and assessment of Adverse events
  – Protocol compliance
  – Monitor possible drug interactions
PAIN KILLERS

- ATC N02: Analgesics
  - Gabapentin (antiepileptic)
  - SSRI
  - NSAIDs
  - Opioids
  - Paracetamol

SDQ: Pain killers
### SDQ structure

**SDQ main table**

<table>
<thead>
<tr>
<th>SDQ-number</th>
<th>SDQ name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Pain killers</td>
<td></td>
</tr>
</tbody>
</table>

**SDQ subgroup table**

<table>
<thead>
<tr>
<th>SDQ-number</th>
<th>SDQ subgroup number</th>
<th>Sub group name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>01</td>
<td>ATC: N02</td>
</tr>
<tr>
<td>1</td>
<td>02</td>
<td>NSAIDs</td>
</tr>
<tr>
<td>1</td>
<td>03</td>
<td>SSRI</td>
</tr>
<tr>
<td>1</td>
<td>04</td>
<td>Gabapentin</td>
</tr>
</tbody>
</table>

**SDQ drug table**

<table>
<thead>
<tr>
<th>SDQ subgroup number</th>
<th>Drecno</th>
<th>Base name</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>000363</td>
<td>Morphine</td>
</tr>
<tr>
<td>01</td>
<td>000200</td>
<td>Paracetamol</td>
</tr>
</tbody>
</table>
The pilot release March 2009

- NSAIDs
- Monoclonal antibodies
  - Antineoplastics
  - Non-antineoplastics
- C-level ATC
Next release March 2010

- Anti-hypertensives and diuretics
- Corticosteroids
- Analgesia producing opioids
- DMARDS (disease modifying antirheumatic drugs)
- Corticosteroids
- Anticoagulants
- Antineoplastics
- Anticonvulsants
- Biologicals
- CYP
Cumulative changes file

- Cumulative changes file
  - Traces all Drug Codes since 2004
  - Mapped discontinued codes (incorrect or reclassified) to replacement codes
  - Help users upgrade from old releases
  - Can also be useful in versioning of coded data

- Have you coded to any code that have been deleted?
Delete - Replace

Has any of the Drug Codes we have used (coded to) been deleted. If so which are the replacement codes? Should we re-code?

- Use the cumulative changes table.
- Example: 0163270100508401166101014
- This means that
- Concor plus 01632701005 Bisoprolol hemifumarate/Hydrochlorothiazide
  Was deleted. It was last used 084 (December 2008) It is now pointing at Concor Plus 01166101014 Bisoprolol fumarate/Hydrochlorothiazide

- Any clinical data that uses the code 01632701005 should be re-coded to 01166101014
- The name Concord Plus became unique.
Delete - Replace

### Table 1

**Search: Product Name like concor plus**

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Drug Code</th>
<th>Ingredient(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concor Plus</td>
<td>01166101014</td>
<td>Bisoprolol fumarate/Hydrochlorothiazide</td>
</tr>
<tr>
<td>Concor plus</td>
<td>01632701005</td>
<td>Bisoprolol hemifumarate/Hydrochlorothiazide</td>
</tr>
</tbody>
</table>

### Table 2

**Search: Product Name like concor plus**

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Drug Code</th>
<th>Ingredient(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concor Plus</td>
<td>01166101014</td>
<td>Bisoprolol fumarate/Hydrochlorothiazide</td>
</tr>
</tbody>
</table>
Previously unique - Non unique?

- Has any of the products we have coded to become non-unique?
- Use the DD Changed DrugName.txt. Identify entries where /code/ has been added.
- Example:
  06235401001SEVIKAR /06235401/SEVIKAR
- Check if any of the drug codes have been used in your clinical data.
- Find the ‘new’ Sevikar. Use the DD_ins.txt. Find the other entry:
  062308010065M09 237UNS 02 093SEVIKAR /06230801/
- Decision: should the code selection be revised?
Previously unique - Non unique

### Search: Product Name like sevikar

**Number of rows:** 1 (DDE, HD: 1)

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Drug Code</th>
<th>Ingredient(s)</th>
<th>Generic</th>
<th>Preferred</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sevikar</td>
<td>06235401001</td>
<td>Amlodipine/Olmesartan medoxomil</td>
<td></td>
<td>Yes</td>
</tr>
</tbody>
</table>

### Search: Product Name like sevikar

**Number of rows:** 2 (DDE, HD: 2)

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Drug Code</th>
<th>Ingredient(s)</th>
<th>Generic</th>
<th>Preferred</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sevikar</td>
<td>06230801006</td>
<td>Amlodipine besilate/Olmesartan medoxomil</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sevikar</td>
<td>06235401001</td>
<td>Amlodipine/Olmesartan medoxomil</td>
<td></td>
<td>Yes</td>
</tr>
</tbody>
</table>
Non-unique

- Has any additional alternative been added to a previously non-unique name?

- Use the DD_ins.txt. Identify inserts with /code/ that do not have corresponding entries (same name minus /code/) in the DD Changed DrugName.txt.

- Example:
  025954010010M05SCH UNS 08 053CRAMPEX /02595401/

- Compare with corresponding ‘old’ entries in the DD.txt:
  018265010019M05 237UNS 03 051CRAMPEX /01826501/
  005142010015M77 19UNS 04 044CRAMPEX /00514201/

- Check if the ‘old’ entries have been used in your clinical data.

- Decision: should the code selection be revised?
### Non-unique

#### Search: Product Name like Crampex

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Drug Code</th>
<th>Ingredient(s)</th>
<th>Generic</th>
<th>Preferred</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crampex</td>
<td>00514201001</td>
<td>Calcium gluconate/Ergocalciferol/Guaifenesin/Nicotinic acid</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Crampex</td>
<td>01826501001</td>
<td>Calcium gluconate/Ergocalciferol/Nicotinic acid</td>
<td>Yes</td>
<td></td>
</tr>
</tbody>
</table>

#### Search: Product Name like Crampex

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Drug Code</th>
<th>Ingredient(s)</th>
<th>Generic</th>
<th>Preferred</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crampex</td>
<td>00514201001</td>
<td>Calcium gluconate/Ergocalciferol/Guaifenesin/Nicotinic acid</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Crampex</td>
<td>01826501001</td>
<td>Calcium gluconate/Ergocalciferol/Nicotinic acid</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Crampex</td>
<td>02595401001</td>
<td>Atropa belladonna/Calcium carbonate/Copper acetate/Homeopaties nos/Magnesium phosphate/Potassium bromide/Silicic acid/Zinc oxide</td>
<td>Yes</td>
<td></td>
</tr>
</tbody>
</table>
New/Changed ATC-Codes

• If you code ATC as well as Drug Code – has the yearly **ATC revision** affected any of the codes you have selected?

• Use ATC info YYYY.xls
New/Changed ATC-Codes

ATC 2007:4

- L ANTINEOPLASTIC AND IMMUNOMODULATING AGENTS
  - Search for entries coded with this 1st level code
  - L01 ANTINEOPLASTIC AGENTS
  - L02 ENDOCRINE THERAPY
  - L03 IMMUNOSTIMULANTS
  - L04 IMMUNOSUPPRESSIVE AGENTS
    - Search for entries coded with this 2nd level code
      - L04A IMMUNOSUPPRESSIVE AGENTS
        - Search for entries coded with this 3rd level code
          - L04AA Selective immunosuppressive agents
          - L04AX Other immunosuppressive agents

ATC 2008:1

- L ANTINEOPLASTIC AND IMMUNOMODULATING AGENTS
  - Search for entries coded with this 1st level code
  - L01 ANTINEOPLASTIC AGENTS
  - L02 ENDOCRINE THERAPY
  - L03 IMMUNOSTIMULANTS
  - L04 IMMUNOSUPPRESSANTS
    - Search for entries coded with this 2nd level code
      - L04A IMMUNOSUPPRESSANTS
        - Search for entries coded with this 3rd level code
          - L04AA Selective immunosuppressants
          - L04AB Tumor necrosis factor alpha (TNF-) inhibitors
          - L04AC Interleukin inhibitors
          - L04AD Calcineurin inhibitors
          - L04AX Other immunosuppressants
New/Changed ATC-Codes

Other ATC changes than the yearly ATC revision

• Deletes
• Inserts
• Updates

Decision: should the code selection be revised?
ATC precision

• Name level
  – What is this drug name used for?

• Substance level
  – What is the substance used for?
ATC precision, use

- **Name level**
  - To understand an individual case report
  - To produce certain reports (e.g. CDISC)

- **Substance level**
  - For analysis of large datasets, where the effect of the substance is more relevant than the indication
ATC precision, Substance level

Ketoprofen 00321701001
A01AD Other agents for local oral treatment
M01AE Propionic acid derivatives
M02AA Antiinfl. prep., non-steroids for topical use

Orudis 00321701002
A01AD Other agents for local oral treatment
M01AE Propionic acid derivatives
M02AA Antiinfl. prep., non-steroids for topical use

Orudis 00321701002
MP ID: 524611
A01AD Other agents for local oral treatment
M01AE Propionic acid derivatives
M02AA Antiinfl. prep., non-steroids for topical use
Pharmaceutical Form: Gels and Sols
Ketoprofen 00321701001

**A01AD** Other agents for local oral treatment

**M01AE** Propionic acid derivatives

**M02AA** Antiinfl. prep., non-steroids for topical use

Orudis 00321701002

**M01AE** Propionic acid derivatives

**M02AA** Antiinfl. prep., non-steroids for topical use

**Pharmaceutical Form:** Gels and Sols

Orudis 00321701002

MP ID: 524611

**M02AA** Antiinfl. prep., non-steroids for topical use

Pharmaceutical Form: Gels and Sols

Orudis 00321701002

MP ID: 553239

**M01AE** Propionic acid derivatives

Pharmaceutical Form: Capsules
Additional assignments

• It is possible to use both levels of precision for both B-2 and C.
  – An additional name level assignment in B-2
  – An additional substance level assignment in C

• Available as additional tables, does not affect ‘old tables’.
Old Form

- Composition of a product changes – but the trade name stays the same
- Previously only available in the C format
- Flags if a product no longer is on the market
  - Focus on non-unique names
  - Sometimes country specific
- Available as an additional table to be used by B format users
Old Form – Example 1

- The verbatim Topisolon – available with 2 different compositions
  - Desoximetasone
  - Desoximetasone/Salicylic acid (Old Form flag A)
- In the C format the Desoximetasone/Salicylic acid products are flagged as ’Old form’ in the Name Specifier field
- A = Old Form in all countries, listed in oldform_drugcode_list.txt
<table>
<thead>
<tr>
<th>Product Name</th>
<th>Topisolon</th>
<th>Topisolon</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drug Code</td>
<td>00370301002</td>
<td>01616201005</td>
</tr>
<tr>
<td>Name specifier(s)</td>
<td>Salbe</td>
<td>old form</td>
</tr>
<tr>
<td>Active Ingredient(s)</td>
<td>Desoximetasone</td>
<td>Desoximetasone</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Salicylic acid</td>
</tr>
<tr>
<td>Preferred base name</td>
<td>Desoximetasone</td>
<td>Ibaril med salicylsyre</td>
</tr>
<tr>
<td>Preferred salt name</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Generic Preferred</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ATC code(s)</td>
<td>D07AC Corticosteroids, potent (group III) official</td>
<td>D07XC Corticosteroids, potent, other combinations</td>
</tr>
<tr>
<td>MAH(s)</td>
<td>Abbott AG</td>
<td>Sanofi-aventis</td>
</tr>
<tr>
<td></td>
<td>Aca mueller</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Aventis Pharma</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Beragena arzneimittel gmbh</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bestphago</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bonapharma</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Emra-med</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Eurim-pharm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Gerke pharma</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Gpp pharma</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hoechst pharmaceuticals, incorporated</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Kohlpharma</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mpa</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mtk pharma</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Opti arznei</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sanofi-aventis</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Westen pharma</td>
<td></td>
</tr>
<tr>
<td>Countries</td>
<td>Austria</td>
<td>Germany</td>
</tr>
<tr>
<td></td>
<td>Germany</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ireland</td>
<td></td>
</tr>
<tr>
<td></td>
<td>South Africa</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Switzerland</td>
<td></td>
</tr>
<tr>
<td>Pharmaceutical form(s)</td>
<td>CREAMS</td>
<td>LIQUIDS</td>
</tr>
<tr>
<td></td>
<td>LIQUIDS</td>
<td>LIQUIDS, LOTIONS</td>
</tr>
<tr>
<td></td>
<td>OINTMENTS</td>
<td></td>
</tr>
<tr>
<td>Strength(s)</td>
<td>2.5 mg</td>
<td></td>
</tr>
<tr>
<td>Medicinal Product ID(s)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Old Form – Example 2

• The verbatim Bradosol – available with 3 different compositions
  – Benzalkonium chloride
  – Domiphen bromide (Old Form flag- M)
  – Hexylresorcinol

• M = Old Form in some countries (not all), listed in oldform_drugcode_list.txt
### Old Form – Example 2

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Bradosol</th>
<th>Bradosol</th>
<th>Bradosol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drug Code</td>
<td>00088302055</td>
<td>00093302002</td>
<td>00581401007</td>
</tr>
<tr>
<td>Active Ingredient(s)</td>
<td>Benzalkonium chloride</td>
<td>Domiphen bromide</td>
<td>Hexylresorcinol</td>
</tr>
<tr>
<td>Preferred base name</td>
<td>Benzalkonium</td>
<td>Domiphen</td>
<td>Hexylresorcinol</td>
</tr>
<tr>
<td>Preferred salt name</td>
<td>Benzalkonium chloride</td>
<td>Domiphen bromide</td>
<td></td>
</tr>
<tr>
<td>ATC code(s)</td>
<td>R02AA Antiseptics official</td>
<td>A01AB Antiinfectives and antiseptics for local oral treatment official</td>
<td>R02AA Antiseptics official</td>
</tr>
<tr>
<td>MAH(s)</td>
<td>Novartis consumer health unk</td>
<td>Ciba-geigy Novartis Consum.H.</td>
<td>Columbia lab cda i</td>
</tr>
<tr>
<td>Countries</td>
<td>United Kingdom</td>
<td>Austria</td>
<td>United Kingdom</td>
</tr>
<tr>
<td>Pharmaceutical form(s)</td>
<td>SPECIAL SOLID FORMS, LOZENGES</td>
<td>SPECIAL SOLID FORMS, LOZENGES</td>
<td>SPECIAL SOLID FORMS, LOZENGES</td>
</tr>
<tr>
<td>Strength(s)</td>
<td></td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Medicinal Product ID(s)</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
</tbody>
</table>
Part III: Loading and Updating the B2 and C Formats into TMS
Deriving ATC Codes from WHODrug in TMS to OC

- Since TMS requires a Single Derivable Path to derive dictionary terms to an External System (such as AERS or OC), Drug Names with Multiple ATCs can NOT send ALL possible ATCs to OC.

- This problem occurs regardless of WHODrug Dictionary Format. In B2 Format, it occurs for Preferred Name (Generic) Drugs only, but in C Format, it occurs for ALL Drugs.

- 4 Common options for dealing with this situation in TMS follow.
Loading ATC codes in Type B2 and Type C

• Option 1: Concatenating ATC codes as level detail of Preferred Name or Drug Name.
  – Since the Drug Name is always derivable, the entire set of ATC codes becomes a concatenated string, which is a Level Detail Attribute of the Drug Name or Preferred Term.
  – This requires parsing of the concatenated ATC Codes within OC by Derivation Procedures, or within SAS.
Loading ATC codes in Type B2 and Type C (2)

- Option 2: Create a Primary link to the ATC codes based on some programmatic rule defined by the business users or with a “MULTIPLE” flag
  - Could be based on common occurrences of ATCs, known indications, or even alphabetical order although this is not recommended
- In addition also set a "MULTIPLE" ATC or Level Detail which would indicate to an OC Data Manager that multiple ATCs were possible and therefore, High-Level Reclassification might be necessary. Without this MULTIPLE indicator, a strong knowledge of ATC classifications would be required at the OC level to know whether or not multiple ATCs were possible.
Loading ATC codes in Type B2 and Type C (3)

• Option 3: Load Separate Drug and ATC Dictionaries.
  – Loading Drug Names into a first dictionary and ATCs into a second dictionary
  – The 2\textsuperscript{nd} ATC Dictionary would have a classification level as the concatenation of the Preferred Drug Name and ATC code
  – A derivation procedure populates the VT level of this 2nd ATC dictionary from the classified Preferred Drug name (from the first dictionary) concatenated with Indication or Route for coding in the 2nd dictionary.
  – This requiring two Batch Validations, which is sometimes called a "split" WHODrug dictionary solution.
Loading ATC codes in Type B2 and Type C (4)

- Option 4: Do not derive ATC codes and create a custom view for retrieving all ATC codes into SAS.
Revisions to ATC codes

- Read the ATC info 2009.xls table, and build a “delta” query for changes to ATC codes/texts. Use this in MigrateRelations API.
- Also, use High-Precision (narrow/one)/Low-Precision (broad) ATC codes.
- Both types of assignments available for B2 and C Format.
- There is an ATC tools folder with DDA_Exclusive table with only the “High Precision” mapping.
- Can be substituted in TMS loading, also a flag could also be introduced to identify High Precision and “Official” (Oslo standard) ATC mapping.
- A similar concept exists in a THG_extended file for C Format, but this file actually widens the analysis by increasing the number of ATCs per drug.
View of TMS, WHODrug B2 without a PL (Opt. 1) and WHODrug Split Dictionary (Opt. 3)
Occo 2009 New Orleans Tutorial Session: WHODrug Formats and Loading in TMS October 2009

Loading the C Format into TMS

- Explain challenges to loading the WHO Drug the C Format in TMS 4.5.
- Identify the key decision points that must be addressed before loading.
- Provide suggestions for possible loading and configuration options.
Differences in the WHODrug C Format Affecting TMS

- The Drug names themselves are **not** unique in the C Format.
- ATC codes are now associated to every Drug Name in the C Format.
- A Pharmaceutical Product level, which contains the Pharmaceutical Form (PF), was introduced in the C Format.
- All ingredients and their amounts were introduced in the C Format.
- The Medicinal Product ID (MP ID), which represents 7 drug attributes, now uniquely identifies a drug:
  - (Drug Name, Name Specifier, Country, Manufacturer, All Ingredients w/ Strengths and Units, Pharmaceutical Form Drug Code (DrgRecNum+Seq1+Seq2)).
Loading Considerations

- Since the drug name is not unique in the C Format, the drug name alone can not be loaded as the Classification level in TMS. Therefore, the drug names must be made unique somehow.

- In making drug names unique in the C Format, the TMS built-in automatic matching would potentially be diminished. Some considerations have to be made for preserving TMS auto encoder efficiency.
  
  - There should be an entry with only the Name as he Classification Term and Drug Code as the DICT_CONTENT_CODE.
  
  - Sometimes there are two different Drug Codes (sets of ingredients) for the same Name. In these cases, the TMS coder needs to view the higher levels of the dictionary to find the difference between the entries - it could be country or pharmaceutical form.
Loading Considerations (2)

• Considerations to preserve TMS auto encoder efficiency
  
  • In the March 1 2005 version of the in B-2 Format, the /.../ was added to all names that appeared with more than one drug code including Preferred name entries XXXXXX01001. Approximately 14% of the names needed the additional /.../ code in order to make them unique. The reason why the /.../ code is added is that there is AT LEAST one more entry with the same name but different drug codes. That means that at most 7% of the names are "non-unique".

• In the June 2005 version of the in B-2 Format, the preferred name entries are left without the /.../ code in order to make autoencoding possible.
Loading Choices

- Option 1: Use the Medicinal Product ID itself to make the Drug Names unique in the classification level.
- Option 2: Use the logical expansion of the Medicinal Product ID to make the Drug Names unique in the classification level and possibly populate a VTA Level with Drug Names only.
- Option 3: Add an additional level to store the Drug Names only as part of a Classification Group in the TMS WHODrug structure.
Option 1: Medicinal Product ID at Classification Level

Advantages
- Easy to load.

Disadvantages
- Auto encoding would not be possible.
- Coders would not have information needed to select correct VTA.

- Another suggestion is to add the MP_ID to only non-unique drug terms. However, this still leaves many terms (10,000+) which will not auto encode, and therefore, are less likely to be used.
Option 1 : How it Looks While Coding

DrugName MP_ID
Option 2 : Use the Logical Expansion of the MP ID

Advantages

- Information is available for coders to select appropriate VTA.

Disadvantages

- Nothing auto encodes.
- Load script is more complicated and takes longer.
- Field length may require > CHAR 300.
Option 2 : Auto Encoding Implications

• Load Verbatim Term Assignments (VTAs).
• This also allows coders to use the filter buttons in TMS Omission Management to choose the VTA Level and only code on the Drug Names if desired.
• Problem - Over 10,000 drug names are not unique.
• Do you have to manually code all 10,000+? – Yes and No!
Option 2: Manually Code All Duplicate Drug Names

Advantages
- Control of the codes – you can select certain drugs from specific countries, or manufacturers, or ingredients, etc.
- You could reload same VTAs, once they are selected to new versions of the dictionary.

Disadvantages
- As each version is released, you will need to repeat this exercise.
- How long will it take your team to code 10,000+ terms?
- Some of these terms you will never see in a study, but you will spend a lot of time on them initially.
Option 2 : Or, Don’t do it Manually

- Load only the Unique Drug Names as verbatim terms.
- Code the others as they are encountered as verbatim terms.

Advantages
- Over 40,000 will be able to have VTAs loaded.
- You only spend time on those you need.

Disadvantages
- You may give up consistency in decision making if this is done over time.
- Many of the most common drugs encountered are in this group.
- You need to repeat this with each new version of the dictionary.
Option 2: Or, Do it Systematically

Advantages

- Same script can be used for each new version of the dictionary.
- Logic can be applied that is consistent across all term choices.
- The script will run faster than your team can do the work!
Option 2 : Or, Do it Systematically (cont)

Disadvantages

- Decisions still need to be made on the logic to be used.
- Some terms will not have VTAs because the same drug name by different countries/manufacturers are really different drugs.
- TMS loading Script development is complex and will take some time to run!
- Additional code must be added into the TMS loading script to take into account PF and strength.
Which Drugs Should Have VTAs?

- Drugs having the same DrgRecNum and Seq1 and can have a VTA selected.
- The same DrgRecNum and Seq 1 mean the drug is the same drug with the same Preferred term and the same ingredients.

**Please Note:** WHODrug will continue to support the DrgRecNum and Seq numbers (see the document titled The New C Format: New Features that accompanies each version of the dictionary).
Reason for Multiple Drug Record Numbers

• A strategic decision by a manufacturer to change the active ingredients to improve the product over time, but keep the same Drug Name due to market share and brand recognition.

• The lack of availability of some active ingredients in some countries or geographies, including cases where the raw materials are not available or are banned by a country for human use or import.
Reason for Multiple Drug Record Numbers (2)

- The purchase or acquisition of one company or brand by another combined with a strategic decision to keep the same brand recognition and market share purposes, but to also change or improve the drug which might change the active ingredients.

- The lack of enforcement of intellectual property rights or patents in some countries, where the same Drug Name is used illegally and manufactured with completely different ingredients. WHO-UMC is still obligated to report the creation and use of these drugs.
### Same Drug Name in Different Countries

**Benadryl in Italy**

<table>
<thead>
<tr>
<th>Relation</th>
<th>Term</th>
<th>Rglb?</th>
<th>Appr?</th>
<th>Alt Code</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>T Strong</td>
<td>SODIUM CITRATE 38 84982</td>
<td></td>
<td></td>
<td></td>
<td>Dictionary</td>
</tr>
<tr>
<td>T Strong</td>
<td>MENTHOL 38 84983</td>
<td></td>
<td></td>
<td></td>
<td>Dictionary</td>
</tr>
<tr>
<td>T Strong</td>
<td>DIPHENDRamine HYDROCHLORIDE 38 84984</td>
<td></td>
<td></td>
<td></td>
<td>Dictionary</td>
</tr>
<tr>
<td>T Strong</td>
<td>AMMONIUM CHLORIDE 38 84985</td>
<td></td>
<td></td>
<td></td>
<td>Dictionary</td>
</tr>
<tr>
<td>T Strong</td>
<td>MARTINDALE - THE COMPLETE DRUG REFERENCE</td>
<td></td>
<td></td>
<td></td>
<td>Dictionary</td>
</tr>
</tbody>
</table>

*Note: The table above lists the terms and their corresponding codes in the TMS database.*
### Same Drug Name in Different Countries (2)

#### Benadryl in the United Kingdom

<table>
<thead>
<tr>
<th>Unique Drug</th>
<th>Level</th>
<th>Medicinal</th>
<th>Sequence_ko</th>
</tr>
</thead>
<tbody>
<tr>
<td>BENADRYL WARNER LAMBERT CONSUMER HEALTH IRL</td>
<td>UNIQUEDF</td>
<td>52370</td>
<td>00647601002</td>
</tr>
<tr>
<td>BENADRYL WARNER LAMBERT CONSUMER HEALTH USA</td>
<td>UNIQUEDF</td>
<td>51457</td>
<td>mmmmmm0444</td>
</tr>
<tr>
<td>BENADRYL WARNER LAMBERT DNK</td>
<td>UNIQUEDF</td>
<td>52616</td>
<td>00945601004</td>
</tr>
<tr>
<td>BENADRYL WARNER LAMBERT ESP</td>
<td>UNIQUEDF</td>
<td>51459</td>
<td>000000402051</td>
</tr>
<tr>
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<td>UNIQUEDF</td>
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</tr>
<tr>
<td>BENADRYL WARNER LAMBERT HKO</td>
<td>UNIQUEDF</td>
<td>51462</td>
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<tr>
<td>BENADRYL WARNER LAMBERT ITA</td>
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</tr>
<tr>
<td>BENADRYL WARNER LAMBERT THA</td>
<td>UNIQUEDF</td>
<td>51458</td>
<td>000000402050</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Relation</th>
<th>Term</th>
<th>RGlib?</th>
<th>Appr? Alt Code</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>F</td>
<td>ACRIVASTINE 38 85273</td>
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<td></td>
<td>Dictionary</td>
</tr>
<tr>
<td>T</td>
<td>MARTINDALE - THE COMPLETE DRUG REFERENCE</td>
<td></td>
<td></td>
<td>Dictionary</td>
</tr>
</tbody>
</table>
Changes in the Drug
Robitussin AC

Entered in 2002
Changes in the Drug (2)

Robitussin AC

Entered in 1985
Dictionary Updates and Reducing Data Scope

- One consideration is whether or not all of the Drug data should be loaded. Why not parse all of the Drug Names only and simply load these Drug Names?
  - Not Loading the MP_ID or loss of the MP_ID will make updating this dictionary very difficult. This is because the default TMS APIs for updating the dictionary, TMS_LOAD_DICTIONARY.MigrateRelations and TMS_LOAD_DICTIONARY.MigrateTerms expect a unique DICT_CONTENT_CODE in the dictionary which comes from the vendor which can be compared with queries against the vendor source data to determine what DICT_CONTENT_CODEs to insert/update/delete.
  - Additionally, during the dictionary load process, it is not required to specify a DICT_CONTENT_CODE nor is uniqueness enforced! But during update calls using the TMS_LOAD_DICTIONARY API, it is a de facto expectation.
Dictionary Updates and Reducing Data Scope (2)

- This means not having the MP_ID for all of the WHODrug source data will make updating very difficult. Calls to TMS_USER_MT_DICTIONARY for updating, inserting and deleting terms will have to be made on a separate basis, without the benefit of the TMS migration APIs.

- Additionally, if only part of the drug data is loaded (a reduction in the data scope), it may be possible to make a validation argument that the dictionary loaded in TMS was not actually a representation of the WHO-UMCs WHODrug dictionary, but a customized dictionary which is a proprietary to a single organization, which may introduce some additional validation requirements.
Loading and Update Considerations for B2 Format

- Since the Drug Recnum + Sequence 1 have been added to the B2 format for Drug Names which have multiple Drug Record Numbers, some Drug Names which previously autocode do not currently autocode.

- While this represents a small percentage of Drug Names in quantitative terms, these drugs are the most commonly used and therefore occur the most frequently

- NOTE: SEQ1 will be EXPANDED TO 3 CHARACTERS IN MARCH 2010
Why does Aspirin No Longer Autocode?

• Consider the drug aspirin in the WHODD or WHODDE B2 format dictionary:
  • In the case of WHODD, the single occurrence of aspirin appears with a drug record number appended, to indicate that other drug record numbers are possible
  • In the case of WHODDE, multiple occurrences of aspirin exist with different drug record numbers
Possible Solutions: Use OLD Form Table

- In March 2010:
  - There will be an Old Form table
    - “A” or “M” listing of drug codes
    - A=Drug Code is ALWAYS flagged as Old Form, meaning it is not currently on-market. This flag can be used to eliminate these codes.
    - M=some countries still use Old Form, or it can not be confirmed that this specific Drug is NOT in use everywhere.
- Can be used for uniqueness for loading.
Possible Solutions: Use Loading Rules

- Use a similar algorithm for WHODrug Type C format loading for B2.
  - Requires establishing domain VTA rules for each of the multiple sets of Drug Recnums
  - Drug Names could be defaulted based on country or Preferred Name derivation
  - Create Global VTAs where a single drug exists with a Drug Code appended if the WHODD Type is being used.
Possible Solutions: Derive Only Preferred Names/Use Search Objects

- If the goal of coding is ONLY to derive Preferred Names and NOT ATCs, then it is possible to create a Global VTA if all the Preferred Names are the same, even if the Drug Recnums are different.

- Possible enhancements to TMS to allow “single” VTA coding (formerly called VTI functionality), which is similar to HLC at the VT coding level instead.

- Derive a specific match based on Site/Investigator/Patient location or country, and use this in a derived question or Search Object.

Authors: Anders Hansson, Daniel von Sydow, Sunil G. Singh
Up-versioning Considerations:
Deletion of Drug Codes

- Read cumulative changes table and compare BOTH Drug Codes (DICT_CONTENT_CODE) and Drug Name. If Drug Names are equal, but Drug Codes have been changed, then DICT_CONTENT_CODE could be used for either a deletion or a replacement.
Changes from Unique to Non-Unique Drugs

- Read DD Changed Drug Name.txt and compare DICT_CONTENT_CODE with Drug Codes. Use a group by to determine if there is an increase in the net count of a specific Drug Code.

- WHODD may not have the alternative case, but this may only be available in WHODDE. In the case where there is a /DRUG RECNR+SEQ1/ and it is the ONLY occurrence in WHODD, then some further investigation may be required. WHODDE might be useful for reference in this case, or for the purposes of TMS loading, this can be considered a unique case.
Implementing SDQs in TMS 4.6

- Current Filter dictionary approach can be used, with the same type of Informative Notes for Description and Source.
- Concept of hierarchical SMQs is also possible
- Similar Algorithm Informative notes can also be used for identifying related terms.
SDQ Filter Dictionary Definition

- Short Name: SDQFILTER
- Name: SDQ Filter Dictionary
- Description: SDQ Filter Dictionary
- Language: English
- Dict Type: Filter
- Status: Active
- VT Level Required?: No
- Term Uniqueness enforced?: No
- Web Search Accessible?: Yes
- Accessible to Light Browser?: Yes
- Autoqueried in Light Browser?: Yes

Dictionary Term Display Procedure

- Created By: OPS$OPAPPS
- Modified By: OPS$OPAPPS
- Creation Time: 15-OCT-2008 08:49:10
- Modification Time: 15-OCT-2008 08:53:14

Link Type: Filter Dictionary of... To Dictionary: WHODRUG
SDQ Domain Mapping

Define Domains

Domains

Name: SDQ_DOMAIN
Description: SDQ Test Domain

Audit Information

Created By: ORACLE CPAPPS
Creation Time: 15-Oct-2008 08:57:35

Multi Display Domains

Define Domain Dictionaries (SDQ_DOMAIN)

Dictionary Name
SDQ Filter Dictionary
WHOEDRUG

VTA Appr Read?

Action Appr Req?

Created By
ORACLE CPAPPS
ORACLE CPAPPS

Modification Time
15-OCT-2008 08:57:46
15-OCT-2008 08:57:46

Modified By

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SDQ NRLs: Substrates, Inhibitors, Inducers
SDQ Activation Group

- **Activation Group**: SDQ_AG
- **Description**: SDQ Activation Group
- **Audit Information**:
  - **Created By**: OPS$OPAPPS
  - **Creation Time**: 15-OCT-2008 09:14:03
  - **Modified By**: OPS$OPAPPS
  - **Modification Time**: 15-OCT-2008 09:15:05

- **Dictionaries within the Activation Group**:
  - **Short Name**: SDQFILTER
  - **Name**: SDQ Filter Dictionary
  - **In Domain?**: ✓
  - **Short Name**: WHODRUG
  - **Name**: WHODRUG
  - **In Domain?**: ✓
### SDQ Relations Lite Browser

**Term (Today)**

<table>
<thead>
<tr>
<th>Level</th>
<th>Term</th>
<th>Relation</th>
<th>Domain</th>
<th>Related term</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>CYP3A4</td>
<td>Inducers</td>
<td></td>
<td>A.E.P</td>
<td>WHOD</td>
<td>-PN</td>
</tr>
<tr>
<td>CYP3A4</td>
<td>Inhibitors</td>
<td></td>
<td>EAS-3</td>
<td>WHOD</td>
<td>-PN</td>
</tr>
<tr>
<td>CYP3A4</td>
<td>Inhibitors</td>
<td></td>
<td>ALZOLE-F</td>
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<td>CYP3A4</td>
<td>Inhibitors</td>
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<td>AZOSTAT</td>
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<td>Inhibitors</td>
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<td>FLUCONAZOLE</td>
<td>WHOD</td>
<td>-PN</td>
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<tr>
<td>CYP3A4</td>
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Questions?

• Write to the UMC:
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• Write to DBMS Consulting:
  – singh@clinicalserver.com
Biographies

Sunil is a Global Oracle Health Sciences deployment expert for DBMS Consulting. He has been an active member of the OCUG community since 1996 and is extremely grateful for this opportunity to make these presentations at OCUG 2009.

Carl Huddénius, MSc Pharm, Assistant Product Manager Uppsala Monitoring Centre
Appendix
Part I: Overview, Content and Usefulness of the WHODrug Dictionaries
WHO Drug Dictionary History

- WHO Drug is a dictionary of known medicines maintained by the World Health Organization since 1968.
- It contains lists of all known manufactured drugs in every country that was ever reported to WHO or IMS Health.
- WHO Drug identifies Generic Drugs (Preferred Terms) and non-Generic Drugs
- The dictionary also associates a drug with an Anatomical-Therapeutic Chemical (ATC) Classification; that is, the parts and systems of the human body where this drug might have an effect.
- The dictionary has changed structure (formats) three times in its history, the most recent in 2002 with the introduction of the C Format, which provides a unique MP_ID and associates EVERY Drug to an ATC code.
WHODrug Dictionary History (2)

• Until 2002 there was only one format
• Until 2005 there was only one type

• Historical data is often coded with
  – dictionary type: WHO Drug Dictionary
  – dictionary format: B-2
WHODrug Dictionary Types

- The WHO Drug Dictionary, WHO Drug Dictionary Enhanced, and WHO Herbal Dictionary are different products; the difference between them are the content.
  - WHO-HD contains herbal products only (ska den stå för sig själv?)
  - WHO-DD is the same WHO Drug dictionary which has existed previously
  - WHO-DDE contains the same types of products as the WHO-DD but with the addition of a large number of new drugs from IMS Health.
  - WHO-DDE+WHO HD contains the content of WHO-DDE and WHO-HD without overlaps in data.
- All three dictionaries are provided in the three different FORMATS - C, B-1 and B-2. Therefore loading considerations for WHODD are also valid for WHODDE and WHOHD.
- There are a few minor differences in the use of a few fields between WHODD and WHOHD.
WHO Drug Dictionary

- The WHO Drug Dictionary contains medicinal data that has been reported from National Centers
- In order to populate the dictionary with all products in all countries the UMC entered into a collaboration with IMS Health
- Increased the number of names by ~300% (B-2 entries)
- All customers are provided both the B-2 and C format
WHO Drug Dictionary Enhanced

- Collaboration with IMS required a new agreement with the subscribers
- WHO Drug Dictionary Enhanced was produced as a separate dictionary type
- Subscribers that have not upgraded can still use WHO Drug Dictionary – without the IMS data
- New customers get WHO Drug Dictionary Enhanced
- All customers are provided both the B-2 and C format
WHO DDE - Uses

+ More names – increased chance of finding a ‘direct hit’.
Less manual work

+ Reduced need for taking chances and “googleing” – higher quality of data.

+- Non-unique names may have “siblings” only in WHO Drug Dictionary Enhanced
+- More non-unique trade names
WHO DDE - Maintenance

- The WHO DDE grew dramatically during 2005-6.
- It continues to grow with data from IMS – new launches and new formulations
- Modified formulations are also reported from IMS
- Other sources of data are also entered into WHO DDE
WHOHD Content

- The WHO Herbal Dictionary contains all products that only include ingredients of natural origin.

- Products that contain a combination of conventional substances and herbals will be included in the WHO Drug Dictionary and the WHO Drug Dictionary Enhanced.

- All entries in the WHO Herbal Dictionary are coded with the Herbal ATC classification.

- Not a separate product, it is only provided in combination with the WHO DDE
WHO Herbal Dictionary

- A need for special classification of herbal products – botanic instead of chemical.
- The Drug Code identifies plants and parts of plants instead of molecules and salts.
- ‘CAS number’ (substance ID) identifies plants etc.
- Herbal ATC contains additional groups.
WHO Herbal Dictionary - Uses

The ‘chemical environment’ contains also the herbal remedies the patients take.

Trade names for herbal products can be found.
Combined Dictionaries

- WHO Herbal Dictionary is distributed seamlessly integrated with WHO Drug Dictionary and WHO Drug Dictionary Enhanced
- All files contain a mix of herbals and conventional products
- ATC files contain a mix of ATC and HATC
- No overlaps!
WHODrug Dictionary the B-2 Format
WHODrug Dictionary C Format

Structural differences between the B-2 Format and the C Format such as ATCs relating to all drugs and not only PNs.
Sequence 3 and 4

• Information about Pharmaceutical Form and Strength have been added to the Medicinal Product table
  – Sequence Number 3 – Pharmaceutical Form
  – Sequence Number 4 – Strength

• Facilitates the use of the C format, all relevant information is available in the same table
Use of Sequence 3 and 4

- With the additional fields all important data fields can be accessed in the Medicinal Product table – a ‘one table’ dictionary can be created.

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Content Differences Between B-2 and C: Name

WHO Drug Dictionary B-2 Format

- Distributed for over 20 years
  - It is a dictionary of drug names, where a name can be searched and translated to coded information.
  - It consists of mainly active ingredients, drug codes (which represents active ingredients and salts/esters) and Anatomical Therapeutic Chemical Classification.

- The drug name appears only once
  - A drug name is added the dictionary at the first occurrence of the name.

- Please Note: The B-2 Format was made completely country independent in the March 1, version 2005.
Content Differences Between B-2 and C: Country

WHO Drug Dictionary C Format

- The C Format allows for country specific information
- It is possible to see which drug names appear in a specific country.
- This information is especially relevant for certain types of products; where the same product names are marketed in different countries with different sets of ingredients.
- In the B-2 Format the coder will not be able to determine which version of the drug is used in a certain country, but this information is available in the C Format.
Content Differences Between B-2 and C: Dosage Form and Strength

The C Format contains more information than the B-2 Format; dosage form and strength. The UMC has put more focus on populating the dosage form information than the strength information for two reasons:

- The dosage form information is relevant to the analysis of clinical data.
- Types of reaction may vary depending on the type of administration; local versus systemic effects, and there could be different types of reactions to a sustained release tablet compared to a regular tablet.
- Inadequate dosage forms may explain adverse reactions; Esophagus Ulcer caused by capsules that weren’t swallowed properly.
- Sometimes the same trade name is available in different dosage forms, with different ingredients.
- The suppository could contain additional ingredients, or different salts of the substance.
Content Differences Between B-2 and C: Drug Code

In the B-2 Format, the Drug Code, unique system code, describes the active ingredient(s), the salt/ester and the product name.

- The code is very useful for analysis, but it causes the following problems for data management:
  - The Drug code is affected when a product formulation is changed; one of the active ingredients is replaced by another, or a different salt of a substance is used.
  - The Drug code is affected when corrections are made; if a drug has been included in the dictionary with an incorrect salt or substance and later corrected.
  - The Drug code is affected when the name changes for various reasons. This means that the system has neither a code nor a text that is completely stable. (although these changes are exceptions and are not very common).
Content Differences Between B-2 and C: ATC Coding with B-2

- Both the B-2 Format and the C Format contain ATC classification.
- WHO Drug Dictionary B-2 Format
  - All products are coded with the same ATC codes as its preferred name (an active ingredient or unique combination of active ingredients).
  - For example, all products containing Acetyl Salicylic acid will be coded with the following ATC codes:
    A01AD  LOCAL ORAL TREATMENT
    B01AC  PLATELET AGGREGATION
    N02BA  ANALGESICS AND ANTIPYRETICS
Content Differences Between B-2 and C: ATC Coding with C

WHO Drug Dictionary C Format

- A specific product is coded with the ATC code that reflects the most common use of the product.
- For example, an Acetyl Salicylic acid product used mainly as a painkiller would be coded with the N02BA code.