Supporting Public Health Globally via the Use of Terminology Standards

Use of MedDRA in Adverse Event Reporting

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Objectives of this Presentation

- Role of MedDRA in supporting public health:
  - What is MedDRA?
  - How MedDRA used is used?
  - Who uses it?
  - Examples of use

- Role of MedDRA in helping to improve adverse event reporting
  - Use of mobile apps to report adverse drug reactions
  - Use of social media?
Background
What is MedDRA?

Med = Medical
D = Dictionary for
R = Regulatory
A = Activities

Supports public health by facilitating safety monitoring of medical products
MedDRA is a clinically validated international medical terminology used by regulatory authorities and the regulated biopharmaceutical industry. The terminology is used through the entire regulatory process, from pre-marketing to post-marketing, and for data entry, retrieval, evaluation, and presentation.
MedDRA Features

- 80K terms arranged hierarchically
- Classification for a wide range of clinical data
- Available in 11 languages
- Rigorously maintained
- Required component for electronic reporting
Scope of MedDRA

- Medical conditions
- Indications
- Investigations (tests, results)
- Medical and surgical procedures
- Medical, social, family history
- Medication errors
- Product quality issues
- Device-related issues
- Pharmacogenetic terms
- Toxicologic issues
- Standardized queries
MedDRA Structure (cont)

- SOC Ear and labyrinth disorders
  - HLG Aural disorders NEC
  - HLG Congenital ear disorders (excl deafness)
  - HLG External ear disorders (excl congenital)
  - HLG Hearing disorders
  - HLG Inner ear and VIIth cranial nerve disorders
    - HLT Inner ear disorders NEC
    - HLT Inner ear infections and inflammations
    - HLT Inner ear signs and symptoms
      - PT Cogan's syndrome
      - PT Motion sickness
      - PT Tinnitus
      - PT Vertigo
        - LLT Acute rotatory vertigo
        - LLT Head revolving around
        - LLT Head revolving round
        - LLT Head spinning
        - LLT Other and unspecified peripheral vertigo
        - LLT Other peripheral vertigo
        - LLT Peripheral vertigo, unspecified
        - LLT Room going round
        - LLT Rotatory vertigo
        - LLT Spinning
Users
Regulatory Use

- True international standard for adverse event (AE) reporting and analysis
- US FDA
  - Not mandated but *de facto* standard in US
  - Used in several FDA databases
- Japanese Ministry of Health, Labour and Welfare
  - Mandatory use in electronic reporting
- European Union
  - Mandatory use in electronic reporting
  - EudraVigilance database
  - Good Pharmacovigilance Practices (GVP) specifically mention MedDRA
- Biopharmaceutical industry
• US FDA databases using MedDRA

  – Center for Drug Evaluation and Research (CDER)
    • FAERS (drugs and biologics)
  - Center for Biologics Evaluation and Research (CBER)
    • VAERS (vaccines)
  - Center for Food Safety and Applied Nutrition
    • CAERS (food, dietary supplements, cosmetics)
Who Else Uses MedDRA?

- Non-ICH regions
- WHO’s international drug monitoring center (Uppsala Monitoring Centre)
- Academic researchers
- CDC
- Toxicologists
- Others

More than 5,000 subscribing organizations worldwide in more than 100 countries
Examples of Use
Where MedDRA is Used

Regulatory Authority and Industry Databases
Individual Case Safety Reports and Safety Summaries

Clinical Study Reports
Investigators’ Brochures
Core Company Safety Information
Marketing Applications
Publications
Prescribing Information
Advertising
How MedDRA is Used

...and by this SOC...

...by this HLGT...

...by this HLT...

All of these reports are represented by this PT...

Report 1: “My head felt like it was revolving on an axis”

Report 2: Patient diagnosed with rotary vertigo

Report 3: “Felt like the room was going around”

- Ear and labyrinth disorders
  - Aural disorders NEC
  - Congenital ear disorders (excl deafness)
  - External ear disorders (excl congenital)
  - Hearing disorders
  - Inner ear and VIIIth cranial nerve disorders
    - Inner ear disorders NEC
    - Inner ear infections and inflammations
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        - Acute rotatory vertigo
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        - Other and unspecified peripheral vertigo
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        - Peripheral vertigo, unspecified
        - Room going round
        - Rotatory vertigo
        - Spinning
Codes and Languages

- Hoofdpijn (Dutch)
- Headache (English)
- Céphalée (French)
- Bolest hlavy (Czech)
- Cefaleia (Portuguese)
- Kopfschmerz (German)
- Fejfájás (Hungarian)
- Cefalea (Italian)
- 頭痛 (Japanese)
- Cefalea (Spanish)

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Electronic Submission
Improving adverse event reporting
State of Adverse Event Reporting

- Publications describe high levels of under-reported adverse events
  - 95% of all AEs and 80% of serious AEs are under-reported\(^1\)
  - Hospital staff did not report 86% of events to incident reporting systems\(^2\)
- This leaves a large percentage of data to be collected

2 - Levinson D. Hospital incident reporting systems do not capture most patient harm. OEI-06-09-00091. 2012
In response to the known under-reporting of AEs, regulators and industry are under pressure to be more proactive to find alternative sources:

- Mining electronic health records
- Mining claims data
- Social media sources
- Direct patient reporting via mobile apps and web portals
WEB-RADR

- WEB Recognising Adverse Drug Reactions
- EU consortium under Innovative Medicines Initiative
- Three year project (Sep 2014-2017)
- Developing mobile apps for ADR reporting
- Investigating use of social media to identify drug safety issues
• Report adverse drug reactions
• Receive information and news alerts
• Patients, caregivers, healthcare professionals
• Mobile apps recently launched in Burkina Faso and Zambia
Yellow Card App

- MedDRA PTs/LLTs embedded
- Free text option
- Good specificity for analysis
- MedDRA can present challenges
  - >200 “rash” terms
  - Granularity may overwhelm users
Patient Friendly Terms

- Developed a set of MedDRA terms that are “patient friendly” to support patient reporting through mobile apps and web portals
- Currently testing a set of ~1,500 terms
  - In Yellow Card app
  - Feedback from patient focus groups
All Headaches vs. Patient Friendly Headaches

75 terms

5 terms
Use of Social Media to Identify Adverse Events?

- WEB-RADR project investigated using Facebook, Twitter, internet patient forums as data sources
  - Look for mention of drug name and words that might represent an adverse event
  - Could “adverse event” words be converted into MedDRA terms for reporting?
<table>
<thead>
<tr>
<th>Username</th>
<th>Date</th>
<th>Text</th>
</tr>
</thead>
<tbody>
<tr>
<td>samantha</td>
<td>1/23/13</td>
<td>Omg I found a forum where ppl are talking about a class action suit</td>
</tr>
<tr>
<td></td>
<td></td>
<td>because vibryd's intense dreams have caused literal medical psychosis</td>
</tr>
<tr>
<td>Best Psychology</td>
<td>1/13/13</td>
<td>is anyone on vibryd: Clinical Depression Forum - Psych forums clvr.it/</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2nQZz8 #psychology</td>
</tr>
<tr>
<td>Alvin B. Lin</td>
<td>12/23/12</td>
<td>Just posted an answer on @Healthtap to: I've been on Vilbyrd 20 mg for</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3 mos, started having tightness in t... htap.us/7Tha</td>
</tr>
<tr>
<td>meridian child</td>
<td>12/22/12</td>
<td>We opened our presents, my family unfortunately forgot vibryd made</td>
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<tr>
<td></td>
<td></td>
<td>me fat and not a small anymore</td>
</tr>
<tr>
<td>EP Confessions</td>
<td>12/20/12</td>
<td>New Confession: Enough... I take cymbalta as well as vibryd for</td>
</tr>
<tr>
<td></td>
<td></td>
<td>anxiety/depression I guess. I quit drinking o... bit.ly/1UJ8NSp</td>
</tr>
<tr>
<td>BAMA FOREVER</td>
<td>12/19/12</td>
<td>I started taking #Vibryd for fibromyalgia and have been to the hospital</td>
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<tr>
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<td></td>
<td>twice in 10 days with heart attack like symptoms. Stopped taking it</td>
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<tr>
<td>Free RX</td>
<td>12/12/12</td>
<td>#heartburn Vibryd - Bad Acid Reflux and Bloating?: Question posted in:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>gerd, abdominal dis... bit.ly/lCZQboQ bit.ly/PIA3hD</td>
</tr>
<tr>
<td>Gray</td>
<td>12/9/12</td>
<td>Starting #vibryd tomorrow. Absolutely terrified of these medicines. If</td>
</tr>
<tr>
<td></td>
<td></td>
<td>anyone's been on it, I'd appreciate your feedback.</td>
</tr>
<tr>
<td>eHealthMe.com</td>
<td>12/1/12</td>
<td>Taking with Lyrica is Sevella for the nerve pain. Also taking vibryd for</td>
</tr>
<tr>
<td></td>
<td></td>
<td>depression, which hasn’t helped at tinyurl.com/twwdm69</td>
</tr>
<tr>
<td>Attack Anxiety</td>
<td>12/1/12</td>
<td>#healthinfo Positive Opinion of Vibryd (I thought /anxiety needed one):</td>
</tr>
<tr>
<td></td>
<td></td>
<td>So, I started takin... q.gs/2QoB3 #TFB #FF #F4F #SV</td>
</tr>
<tr>
<td>Bipolar Awareness</td>
<td>11/24/12</td>
<td>Fan Post: When I over eat, my meds (seroquel, abilify, vibryd) makes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>me throw up or poop immediately. Anyone... fb.me/2a3011UO1</td>
</tr>
<tr>
<td>eHealthMe.com</td>
<td>11/22/12</td>
<td>same here...I'm 42 years old male. As soon as I started taken vibryd i</td>
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<tr>
<td></td>
<td></td>
<td>got hit bay low voltage shock sensation tinyurl.com/8sd2DF</td>
</tr>
</tbody>
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Use of Social Media to Identify Adverse Events? (cont)

- Study showed limited utility of social media to detect drug safety issues
  - May be niche areas where it is more useful
    - Misuse and abuse
    - Product quality complaints
- Regulatory authorities do not recommend any changes in current adverse event reporting practices
- Use of social media data is optional
Conclusion

MedDRA supports global public health and positively impacts patient safety by providing:

- Support for safety monitoring of medical products
  - Facilitates the collection of data for analysis of potential safety signals
  - An international standard used by regulatory authorities, biopharmaceutical industry and others
  - Support for improving adverse event reporting by healthcare professionals and patients via mobile apps and web portals
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