

# Topic 6: Analysis of social media comments for pharmacovigilance purposes

Research

December 10, 2014



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Summary of the 3 research topics

- Identification of suspected drug-related events
- Record Linkage (ie how to handle “duplicates”)
- Signal Detection



# Summary – WP2B – Research

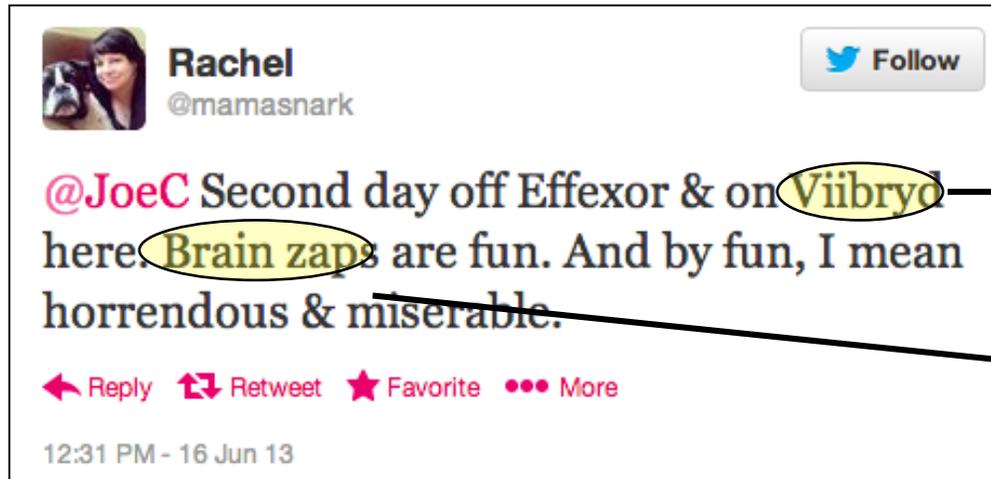
## KEY ISSUE

- How to extract and analyze safety data from unstructured, variable quality free text, posted in very large volumes
- How to synthesize and harness the real information from tweets, facebook posts, blogs etc
- How to aggregate this information and assess whether this aggregated information really is indicative of a drug safety issue

## CHALLENGES

- How do we find the products and events of interest?
- How do we make sure there are no duplicates or fraudulent postings?
- How should we count occurrences and apply thresholds for ‘signaling’?

# A TWEET



 **Rachel**  
@mamasnark 

@JoeC Second day off Effexor & on Viibryd here. Brain zaps are fun. And by fun, I mean horrendous & miserable.

 Reply  Retweet  Favorite  More

12:31 PM - 16 Jun 13

Product recognition

Event recognition

# PRODUCT RECOGNITION

Paracetamol  
Adalat  
Alvedon  
Nifedidor  
Aspirin  
Magnecycl  
Bamyl  
Broadcilin  
Ampicillin  
Panodol  
Ampicillin sodium  
Vicillin  
Penicline  
Acetylsalicylic acid  
Panodil  
Nifedipine

# PRODUCT RECOGNITION

Paracetamol

Vicilin®

Bamyl®

Panodil®

Adalat®

Penicline®

Broadcillin®

Alvedon®

Acetylsalicylic acid

Nifedidor®

Ampicillin

Nifedipine

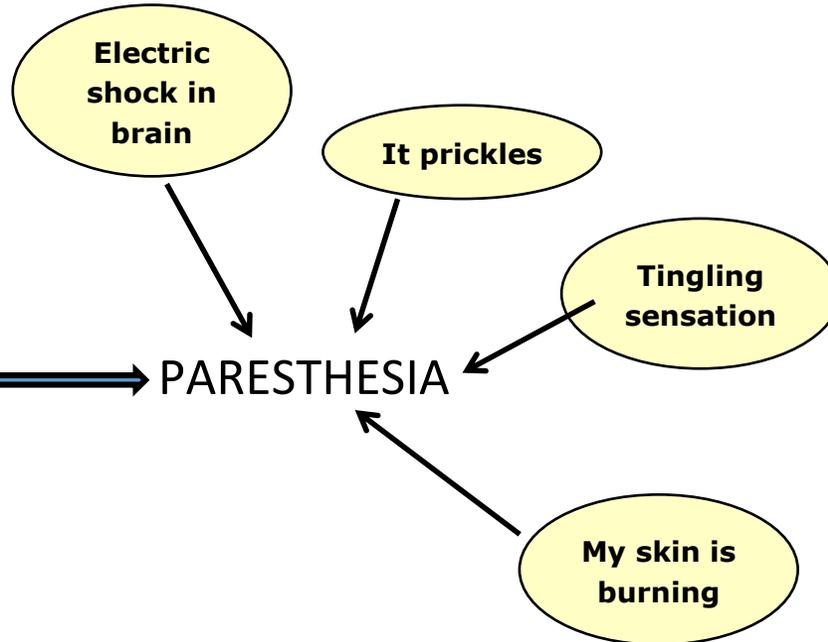
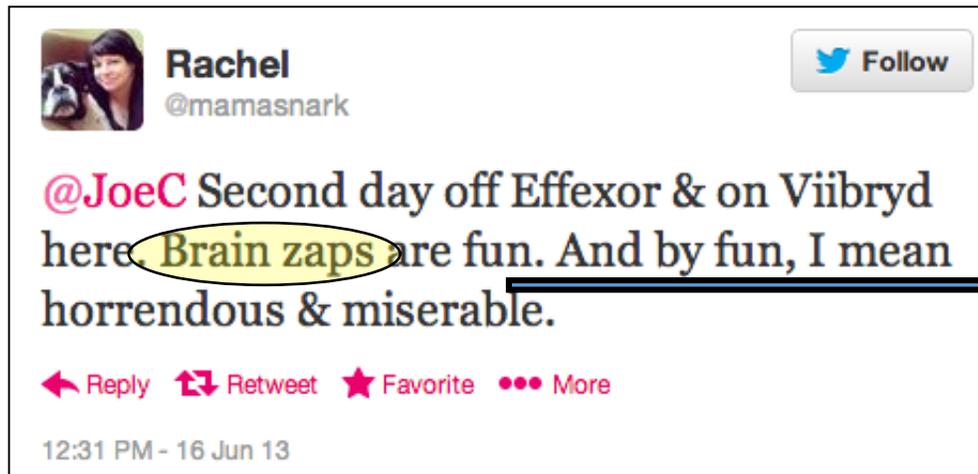
Aspirin®

Panodol®

Magnecyl®

Ampicillin sodium

# EVENT RECOGNITION



SOCIAL MEDIA VERNACULAR



MeDDRA (Medical Dictionary for Regulatory Activities)

# Duplication within platform and across platforms

People post the same experience multiple times.

**Rachel**  
@mamasnark

Follow

@JoeC Second day off Effexor & on Viibryd here. Brain zaps are fun. And by fun, I mean horrendous & miserable.

Reply Retweet Favorite More

12:31 PM - 16 Jun 13

**IS THIS THE SAME EVENT?**

facebook Search for people, places and things

RachelS Activity Log All

### Scheduled Posts

**RachelS**  
Last night I Took Vibryd and got really feeling of an electric shock in my brain it was as if my brain was shivering. I hate that feeling but I guess I just have to put up with it. Peace & Luv everyone

Does anyone else have that feeling also? I know some of my colleagues at wrk experienced similar.

**WileyAndie**  
Know exactly what u means. Zaps like a taser

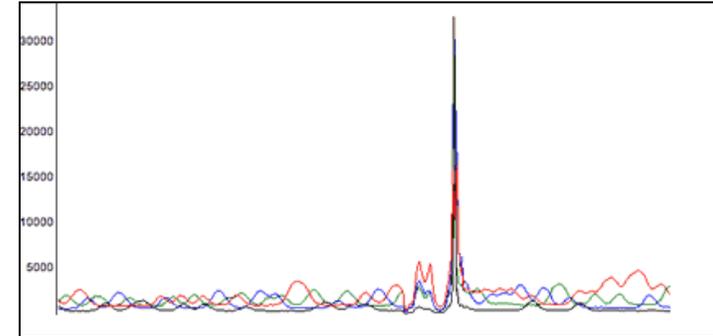
Friday, July 13, 2012 at 11:00am GMT-6

**RachelS**  
Thanks Andie Don't know what 2do about it. Had a similar experience last week

Friday, July 13, 2012 at 11:30am GMT-6

# Signal Detection

## When does something become a signal?



Signal: as information that arises from one or multiple sources (including observations & experiments), which suggests a new potentially causal association, or a new aspect of a known association, between an intervention and an event or set of related events, either adverse or beneficial, that is judged to be of sufficient likelihood to justify verificatory action.

*(Module IX, CIOMS, Geneva 2010)*

→ Count events found in social media for a product, eg PARESTHESIA

- Do these counts go up over time?
- Are these counts 'higher' than for other products?

# Signal Detection Plan

## Stepwise approach

1. Apply standard approaches used in spontaneous reporting databases
2. Adapt existing methods to social media data
3. Explore additional approaches:
  - How to assess trustworthiness of individual items and aggregate data
  - How to handle “stimulated” posting