

Insights from Twitter Proto-AE analysis for Methylphenidate

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Executive summary

- Social media provides a platform where patients share personal information on medicinal product usage, especially off-label use or drug abuse much more openly than other traditional sources of pharmacovigilance reports
- Trend of methylphenidate posts correlate to the examination schedule of universities in the United States indicating possible misuse
- Detailed posts combined with geo-location may provide insights on best approaches for risk management based on such findings
- New methodologies are needed for contextual data mining using combination of text, emoji, geo-location and sentiment analysis



Different aspects, actions and expressions on social media

Source: <http://www.medicalnewstoday.com/articles/288146.php>

OBJECTIVES

Research study based on twitter data to look for patterns linked to changes in label of Methylphenidate within the last two years :

- Trend twitter posts for Methylphenidate with relevant medical keywords for the period of interest.
- Tabulate posts relating to different adverse events grouped by medical concepts
- Compare the mentions to the known adverse events as recorded in the label of the drug
- Review detailed posts for Methylphenidate to confirm context of adverse event and associated sentiment

About Methylphenidate

Methylphenidate is a central nervous system stimulant. It affects chemicals in the brain and nerves that contribute to hyperactivity and impulse control.

Methylphenidate is used to treat attention deficit disorder (ADD), attention deficit hyperactivity disorder (ADHD), and narcolepsy.

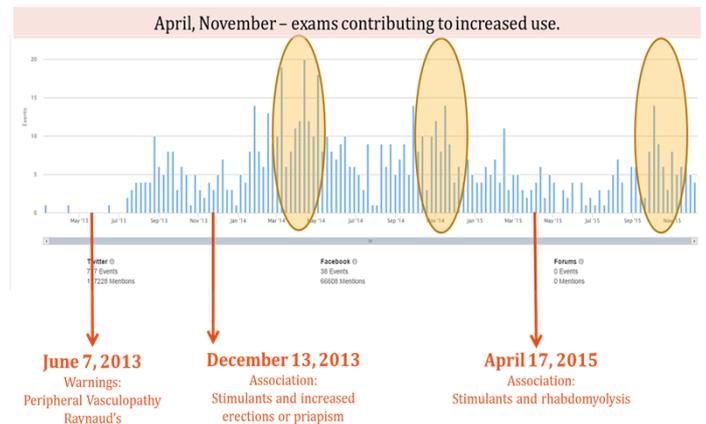


Source: http://www.allposters.com/-sp/Concept-of-Medication-That-Enhances-Brain-Activity-Methylphenidate-Mph-Posters_9008340_.htm

ANALYSIS AND OBSERVATIONS

- Changes to Methylphenidate label did not have any influence on the social media. The post content, volume of posts or events reported had no relationship to the medical terms added to the label.
- Even six months after label changes, these medical events were not reported in posts
- The volume of mentions follow a pattern which seems to be associated with examination periods, and are possibly related to increased drug (ab)use during these periods
- Most of the adverse events reported during this period are known side effects of Methylphenidate, and were mostly non-serious in severity and medical impact
- Proto-AEs for Methylphenidate peaked in 2014, with 2013, 2015 volumes significantly lower than in 2014.

Mention: Altered State of Consciousness



OTHER INSIGHTS

- Written language is evolving in social media with wide spread use of abbreviations, slang, emojis and quotes from music, movies and other media
- Among social media, twitter data analysis is especially challenging due to the character limitation in posts
- Additional efforts are needed to formulate automated engines to “parse” these posts, map to medically meaningful data for pharmacovigilance and contextualize the posts by combining text with emoji and/or other forms of expression

Twitter Challenges

The Evolution of Written Language



RESULT AND CONCLUSION

- Social media services such as Twitter are seeing increasing adoption, and patients are using them to openly share drug abuse, describe drug effects as well as adverse experiences with medical products
- Pattern of methylphenidate mentions matches the examination schedule of universities in the United States indicating possible misuse
- Concurrent use with beverages, cold medication shows possible health risks during maladministration
- Further discussion, research is needed to identify possible approaches to minimize such drug abuse and help identify intervention measures
- In combination with lessons learned from use of mobile platform (WP2A) for bi-directional communication, these findings could help develop appropriate engagement strategy for young adult population to address issues like drug abuse