Towards an artificial intelligence-enabled social media listening solution to inform early patient-focused drug development strategies

MSR106

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LESSONS LEARNED

In-house expertise and capabilities can be leveraged to execute SML studies across therapeutic areas

Establishing clear operational definitions of patients and caregivers, as well as concepts of interest, early in the process accelerates ML algorithms accuracy and the generation of evidence from social media-based patient experience data

FUTURE DIRECTIONS

Refinement of a scalable AI-enabled SML tool, including the establishment of quantitative standards for accuracy metrics as well as qualitative analyses plans

Development of qualitative analyses plans and actionable insights to inform our drug development process in ways that can advance meaningful outcomes for patients and caregivers

Use of Evidence from Social Listening to Inform PFDD Strategies:
- Patient & Caregiver Advisory Boards
- Characterization of unmet medical need
- Topics addressed in patient-facing materials
- Evidence generation plans
- Target product value profiles
- Patient centered outcome endpoints

BACKGROUND & SCOPE

Patient-Focused Drug Development (PFDD)

- PFDD is a systematic approach aiming to improve the quality, relevance, safety and efficiency of drug development and inform drug evaluation, through the incorporation of the patient's perspective throughout the drug development process[1-4].
- This includes:
  - Collecting meaningful patient & caregiver input through systematic approaches
  - Capturing information on patient preferences through appropriate methods
  - Identifying the information that is most relevant to patients related to treatment benefits, risks, and burden
  - Facilitating patient enrolment in appropriate clinical trials
  - Minimizing the burden of patient participation in clinical trials
  - Identifying ways to effectively communicate information to support patient decision making

Social Media Listening (SML)

- Social media has emerged as a source of rich insights on patient experience of strategic value throughout the R&D process.
- Different SML use cases have been reported in a PFDD context, including characterization of unmet needs, patient experience with disease and/or treatment, among others[5-8].

Health Outcomes Research
HEOR experts are committed to PFDD and seeking innovative approaches to listen to, learn from, and act on what matters most to patients and their families

Text Analytics
Data scientists aim to transform unstructured text into structured information and actionable insights for business decisions and enterprise value

Leverage in-house capabilities to develop an AI-enabled SML solution to enable the execution of SML studies to garner patient and caregiver insights from social media to inform early PFDD strategies

APPROACH

What can we learn from patients to advance PFDD early in the R&D process?
- Impact/severity of the disease?
- Symptoms, physical, psychosocial, functional & HRQoL impact
- What do patients think about their current treatment?
- Patient's unmet needs?
- Benefit-risk acceptability?

Filtering data sources
yahoo finance, AMERICAN BANKING AND MARKET NEWS, InvestorVillage, DAILY POLITICAL, myMSteam, Patient, diabetes daily, HealthUnlocked

Data Insights & Analytics
- Drugs / Conditions / Symptoms
- Adverse Events
- Disease Impact
- Mental Health Prediction
- Drug-Switch Prediction
- Medical Sentiments

Continuous improvements to ML models based on expert review & recommendations

- Define Research Questions
- Data Wrangling & Preparation
- Data Pre-Processing
- Patient & Caregiver Classification
- *AI-Enabled* AI & NLP Workflow
- Data Visualization
- Data Analyses & Reporting

Key terms for inclusion & exclusion criteria

Qualitative data collection through passive observation
- Selection of sources
- Refinement of search terms based on information
- Assess the quality with multiple research analyst review
- Protect privacy and avoid personally identifiable information (PII)

Re-trainable ML model to predict whether posts belong to patients, caregivers or considered irrelevant
9,200 Patients
8,015 Caregivers

Insights dashboard
QlikQ
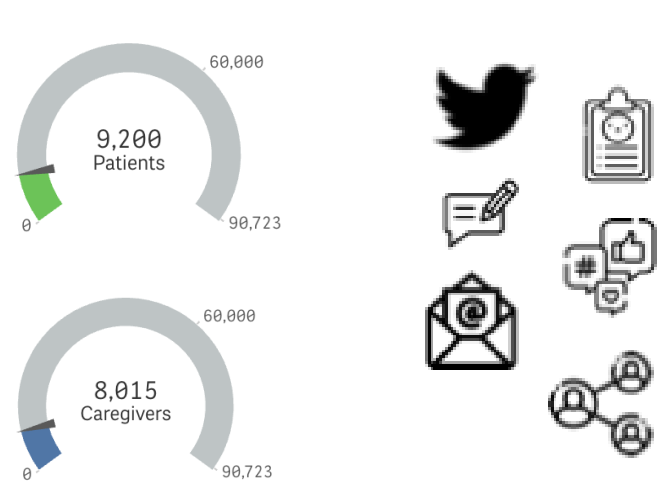
● Human analysts-led   ● AI-Enabled
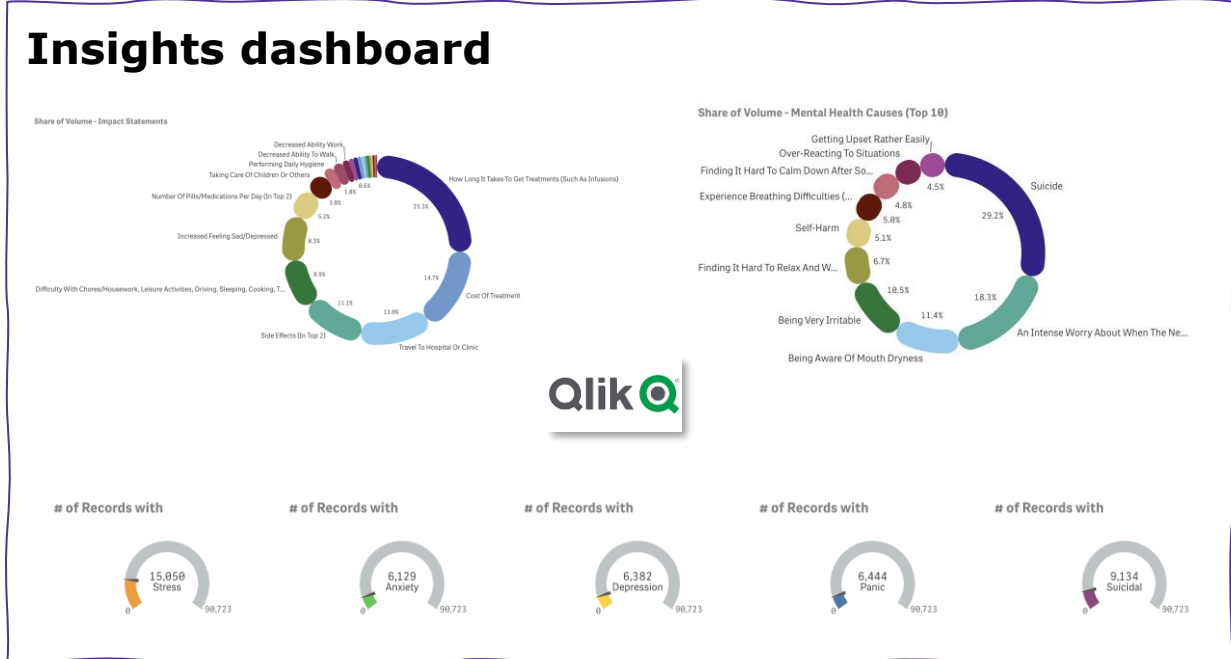
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