IQVIA Safety Intelligence Hub

Self-service access to landscape of safety information, powered by natural language processing (NLP)

Billions of dollars are invested in drug discovery and development each year, but only 1 in 10 drug candidates will be successful in clinical trials and gain regulatory approval, with over 30% of drugs failing to gain approval due to unmanageable toxicity or side effects.

Understanding the safety landscape around any drug, adverse event (AE) or drug target is important, from initial therapeutic target selection through to post-market surveillance. Effective access to the right information is crucial for effective safety assessment and risk management.

However, the volume of safety-related data is growing hugely, and safety teams are seeking to reduce time spent on accessing the right information from key safety data sources, to answer questions such as:

- ”Are there any problems with this drug?
- “Has this event been seen before?”
- “In what patients, or preclinical species?”
- “How can I understand the underlying pathway and critically, the risk liability?”

Solution

The IQVIA Safety Intelligence Hub integrates extensive safety content (including literature, drug labels, FDA regulatory approval packages) with an ontology powered custom search and powerful natural language processing (NLP). NLP is an artificial intelligence (AI) technology that transforms unstructured text into structured output.

The Safety Intelligence Hub provides NLP-powered search to cut through the noise and get you rapidly and effectively to the information you need. It brings value across preclinical, clinical, and post-market safety, with a balance of content sources that provide end-to-end visibility of safety intelligence, from FDA reviews, through clinical trials, to preprint and published literature, and public AE reports.

BENEFITS

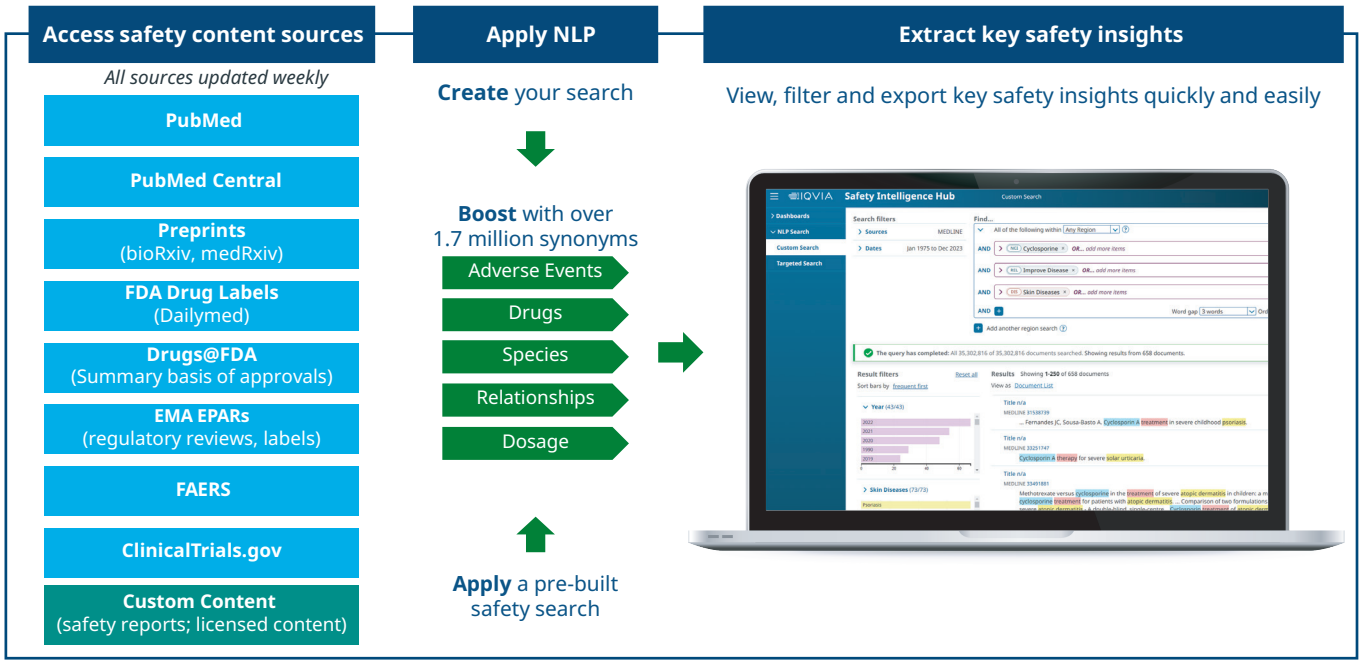
The Safety Intelligence Hub helps safety assessment teams, medical reviewers, drug safety experts and toxicologists to use NLP to quickly investigate adverse events in context from over 60 million records including FDA and EMA drug approvals, literature and drug labels

- Reduce the risk of missing crucial safety events
- Save time by surfacing causal relationships between drugs and adverse events, not just co-occurrence
- Convenient access to key safety related content sources via a single interface
- No infrastructure or NLP experience needed
- Reduce manual effort: Richer results and data extracts will mean faster and improved decision-making

“Our researchers are experiencing 10x to 1000x time savings to answer very complex questions over conventional literature searching, and with more relevant results.”

— Top 10 pharma customer

Figure 1: Intuitive search portal for safety intelligence



The Safety Intelligence Hub provides access to over 60M records from key safety sources, enriched with a blend of NLP methods developed by domain experts. Ontologies provide a million concepts and synonyms including diseases, MedDRA adverse events, drugs and therapeutic products, genes and diseases, tissues and organs, species, dates and dosage, relationships and more, for a consistent search strategy across all sources. The intuitive search portal allows users to create searches or use pre-built queries for repeatable tasks, side-by-side label comparison, results filtering and export.

Your challenges	Our solution
Safety information is present in a broad range of **disparate data sources**	Access up to 60 million searchable safety-relevant data sources via a **single interface**. Customise with internal safety reports
Crucial **safety events are often buried** in unstructured text	Boost your search with millions of synonyms from our **healthcare dictionaries** to quickly extract adverse events and context
Extracting and evaluating the significance of adverse events is a **complex manual** process, prone to error	Enhance the effectiveness of your searches with **safety specific natural language processing (NLP)**
Keeping on top of new adverse event reports is **time consuming**	Be **automatically notified** of new safety information with weekly alerts

Use cases

Evaluate

Top 10 pharma used IQVIA NLP to enable evidence-based decisions about the potential risk-benefit of a drug candidate, to make rapid informed go/no-go decisions for clinical development

Problem: Understanding why a potential adverse event occurred is critically important in safety assessment. Has this event been seen before? With what drugs? In preclinical models, or in patients?

Solution: A clinical biomedical informatics team in a top 10 pharma used IQVIA's AI-enabled safety searches to understand the landscape of drugs associated with the risk of neutropenia, a condition characterized by an unusually low number of white blood cells called neutrophils. Data on drugs reported to cause neutropenia was buried in scientific literature and other textual sources. Using NLP to overcome this barrier, the researchers were able to mine scientific abstracts and curated clinical trial reports extract relevant data for predictive models, and evaluate the potential risk.

Predict

US FDA used IQVIA NLP to assess safety profile of new drugs, based on target intelligence

Problem: 9 out of 10 drugs fail to gain approval due to safety issues. Understanding target liability enables the FDA to assess safety of new drugs entering the market.

Solution: FDA researchers wanted to predict safety of new drugs from adverse event profiles of drugs on the market within the same target class. They used IQVIA NLP and other tools to extract data from three key sources – adverse event reports, peer reviewed literature, and FDA drug labels – and built a data set of features for target-adverse event profiles. These features were fed into an ensemble machine learning model that enabled risk prediction for new drugs targeting the same protein.

Report

Top 10 pharma used IQVIA NLP to improve efficiency of medical literature review

Problem: Pharma companies regularly need to screen medical literature for adverse event reports for their products, but this is a time-consuming manual process.

Solution: A top 10 pharma used IQVIA NLP to systematically search literature abstracts for drug-event associations for their specific suite of products. Manual review time for specific drug adverse events was 1-2 minutes per abstract. Creating a single accurate search and extraction strategy with IQVIA NLP provided a suitable output for rapid final review, in minutes. The team found that NLP also enabled them to find answers and create valuable knowledge around risk-benefits.

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