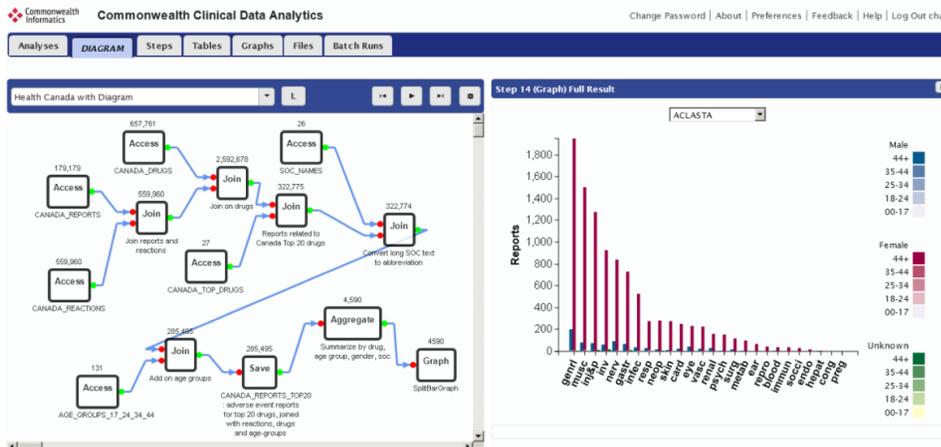# Gain Insights from Complex Clinical Data with CCDA

Clinical data are inherently complex and difficult to interpret. The process for accessing, preparing and using large data sets to answer questions about patient populations, treatments, events and outcomes can be cumbersome and error-prone. Many clinicians must work through a programmer or data analyst to demystify data sources, formulate and refine their questions, and repeatedly rework results. Custom analyses often require multiple rounds of programming, interpretation and discussion which are costly in time and reduce confidence in the reliability of the end results.

Compared with most business data, clinical data pose significant and distinct challenges:

- **Time-orientation** – Clinical insights require deciphering the temporal sequence of events and changes experienced by patients over time, which are hard to derive from the raw data.
- **Messiness** – Clinical data involve many different types of observations, units of measures, and coding systems. Missing data and extra recordings are commonplace and there is much variability in the structure and content of different data sources.
- **Large Scale** ─ Healthcare databases are voluminous with terabytes of data that have been collected over many years.

Unlike general-purpose analytics and business intelligence products, Commonwealth Clinical Data Analytics (CCDA) was specifically designed to allow researchers to explore and analyze clinical data without programming knowledge. Developed by the clinical and safety data specialists at Commonwealth Informatics working closely with domain experts at FDA, NIH, and the US Army Pharmacovigilance Center, CCDA gives researchers hands-on access to clinical data sources so they can gain insights and explore hypotheses. CCDA is a web-based application that requires minimal setup and allows investigators to work directly with data through an intuitive data flow interface that provides full traceability of data transformations and supports high data visibility with the ability to drill down to patient timelines.

Example CCDA
Data Flow Diagram
and Resulting Graph

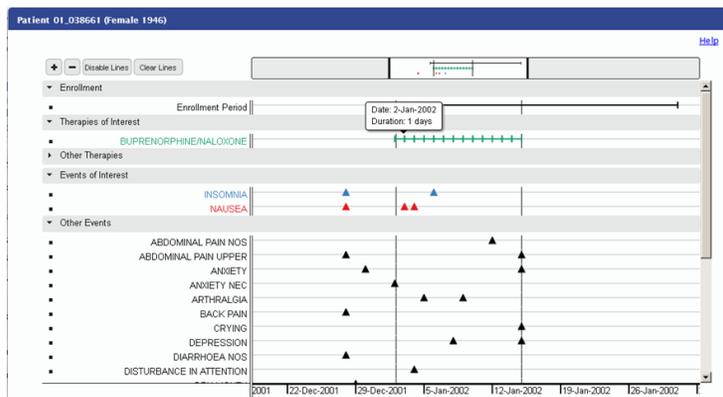## A Single Tool for Multiple Clinical Data Applications

CCDA is being used across the spectrum of clinical research to answer complex questions and improve the quality of analysis and reliability of results. Examples include:

- **Data Curation —** Data scientists use CCDA to help curate data from multiple sources and to produce a traceable record of all actions to support clinical quality assurance and validation.

- **Drug Safety —** Drug safety researchers use CCDA to explore data from different sources to analyze relationships among therapies and medical events and to generate new hypotheses.

- **New Product Insights —** Product marketers and health economics researchers use CCDA to access multiple sources of real-world data to explore market trends and to assess prescribing practices and drug utilization patterns among healthcare populations and geographies.

Unique Features Especially Designed for Clinical Research and Safety

CCDA has unique features and capabilities designed to make interpreting clinical data and answering questions faster, easier and more collaborative:

- Graphical roadmaps for step by step data preparation, analysis and visualization as a fully transparent, traceable and reproducible process

- An integrated workbench for collaborative, incremental data analysis with the ability to examine and refine results at each step in graphic, tabular and patient profile views.

The CCDA patient profile view shows clinical events that occur over a therapy intake timeframe

Key Benefits of CCDA

- **Improved Transparency and Confidence –** CCDA supports collaborative data exploration, resulting in greater analysis quality and improved confidence in results.
- **Cost and Time Savings –** CCDA allows researchers and data scientists to directly access clinical data themselves, reducing the time and cost of analyzing diverse "big data" sets.
- **Ease of Use** – As a cloud-based tool requiring no IT support or infrastructure, CCDA is easy to implement and needs minimal training.

Learn More

To learn more about how CCDA can help you analyze clinical data or to see a demonstration, contact us at sales@commoninf.com.

Commonwealth Informatics