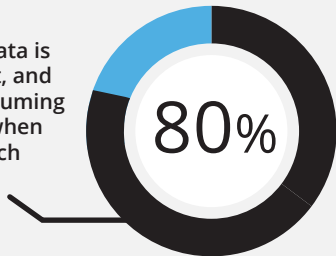


# emtelliPro<sup>®</sup> for Research Insight at Unprecedented Scale

The emtelliPro Natural Language Processing (NLP) engine creates structured data from the unstructured text of medical documents to uncover deep insights into patient health and disease, freeing researchers from manual chart review and unlocking research productivity.

## A Revolutionary Research Engine

80% of medical data is unstructured text, and requires time-consuming manual review when used in research



emtelligent's emtelliPro<sup>™</sup> Natural Language Processing (NLP) engine creates structured data from the unstructured text of medical reports to simplify cohort identification and accelerate data collection and correlation for research across clinical systems, specialties, and patient populations.

### Accelerate Multidisciplinary Research

Advanced data mining and clinical summary tools enable real-time analysis of new and historic orders and reports to build multidisciplinary datasets of patients, procedures, and diagnoses:

- Collect and analyze new and historic data across patient charts and clinical systems in real-time (e.g. EMR/EHR, RIS, PACS, LIS, CVIS, etc.)
- Intelligently compare cross-specialty findings, measurements, and clinical indicators associated with complex clinical conditions to uncover key clinical insights
- Accurately quantify and measure clinical and financial ROI associated with research-driven improvements

### Improve Reliability and Eliminate Bias

Able to process and anonymize millions of reports daily, emtelliPro automates the identification, collection, and correlation of research cohorts at enterprise or population levels to build broad, reliable, and representative datasets:

- Improve the accuracy and reliability of your research findings by eliminating conscious and unconscious bias inherent in human-based data analysis
- Uncover timely and actionable insights across patient populations at enterprise, community, state, or national levels
- Reduce the cost, effort, and delays associated with manual cohort identification and extraction

# Next-Generation Technology for Leading Research Organizations

emteLLiPro's deep learning-based NLP technology identifies, extracts, and correlates data from orders and reports to unlock clinical and operational insights hidden within discrete and narrative data elements.

## Under the Hood



- Process all types of medical text with high precision and recall, aided by our deep learning models that parse the often-confusing text of medical imaging reports



- Extract and codify medical terms using standard or custom ontologies (e.g. SNOMED, RadLex, MEDCIN, etc.)



- Summarize and sort diagnoses from clinical reports by dictionary, diagnosis, diagnostic category, report date, and report type or segment




- Intelligently search for diagnoses within a single patient's chart or from an entire patient population of EMR records

## Straightforward Integration with I.T. Systems

- Vendor-agnostic; compatible with multiple data sources including reports stored in databases, or on disk as text files or PDFs
- Ready for secure cloud-based or on-premise deployments
- Multiple SDKs, including Python, Java, C#, and PHP for integration with apps and existing systems
- Client software that automates post-processing ETL and allows report processing and database population with a single command
- Supports nearly all popular relational databases for storage of emteLLiPro output
- Highly secure; HIPAA BAA option for cloud-based processing

## Showcase Apps

- emteLLiPro Search is a web-based app that demonstrates how emteLLiPro can provide near-real-time discovery and categorization of diagnoses within a single patient's chart or across an entire population of EMR records
- The emteLLiPro Visual Client allows users to visualize the output of emteLLiPro, seeing the relationships between words and identified annotations and assertions
- The emteLLiPro Database is a highly normalized, RDBMS-based database that simplifies app creation or BI software usage using well-known SQL

 Did you know?



\*NLP can reduce the effort associated with manual data extraction from the EHR by up to 99% while simultaneously improving cohort accuracy

\*Comparing manual review of 25,000 ECG reports estimated at 30 seconds each for manual review for a total time of ~26 working days, versus 15 minutes of processing time and 10 seconds for a SQL query using emteLLiPro. Comparing emteLLiPro accuracy for named entity recognition in excess of 90% (internal data) versus human accuracy of unannotated data of ~67% (Karen Fort, Benoît Sagot. Influence of Pre-annotation on POS-tagged Corpus Development. The Fourth ACL Linguistic Annotation Workshop, Jul 2010, Uppsala, Sweden. pp.56-63.)