What is NLP?
A specialized branch of artificial intelligence focused on the interpretation and manipulation of human-penned opinions and written data.

How can NLP help us?
• Improve medical documentation
• Unstructured data conversion
• Document categorization
• Summarization

High-potential NLP use cases in healthcare

Administrative cost reduction
Efficient billing: Extract relevant information from unstructured physician notes into appropriately sized medical codes to facilitate the billing process.

Accurate prior-authorization approval: Leverage information from physician notes to validate denials and expedite the claims process.

Medical value creation
Effective clinical decision support: Aid medical and pharmaceutical professionals in providing the best support at the point of need (e.g., predict post-surgical complications).

Insight

Case study: McKinsey used NLP to accelerate benchmarking clinical guidelines

Examples of NLP approaches and applications

Comparative direct change in clinical guidelines and lab reports

Extract clinical concepts (e.g., diagnoses, procedures, and symptoms) from electronic medical records, patient discharge summaries, and lab reports.

Map clinical concepts and diagnoses with codified clinical guidelines

Develop human-to-machine natural language systems (e.g., robotic assistance surgery guided by human instructions, search-oriented automation).

Illustrative example for identifying ICD-10 code “H40.1121”

- Glaucoma can result in visual impairment when left untreated.
- Intraocular pressure (IOP) is the only risk factor for glaucoma.
- This increased pressure can affect the optic nerve, potentially causing structural damage to the optic nerve fiber and visual field loss. The most common form of glaucoma is called open angle glaucoma that is currently treatable.
- Impairment can manifest with decreasing visual field and visual acuity.
- The most common NLP use cases for detecting glaucoma are Left eye/Mild stage = H40.1121.

ICD-10 code “H40.1121” (Glaucoma/Primary open angle/Left eye/ Mild stage)