



ML with Electronic Health Record (EHR) Data.

CTO – Gabi Maeztu

Data

Processing

Usage

Results

65 - 85% of health data is stored in unstructured format, **free text**.

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Practitioner collected

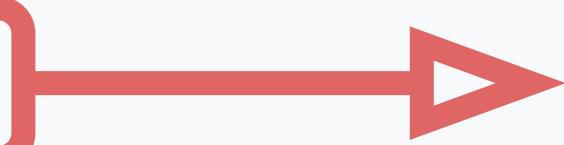
- **Administrative data** → non-clinical data.
- **Claims data** → insurance claims.
- **EHR data** → A narrative of the medical happenings.
- **Health surveys** → which can help evaluate or tally statistics like say, the most common chronic illnesses a nation faces.

Named entity linking

Paciente de oncología que visita urgencias debido a fiebre esporádica que no cede a antiinflamatorios.

- **Group** *Paciente.*
- **Organization** *oncología, urgencias.*
- *debido a.*
- **Finding** *fiebre.*
- **Temporal Concept** *esporádica.*
- **Substance** *antiinflamatorios.*

SCTID:
 386661006



Named entity linking

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- **NER**
- **Disambiguation**
- **Candidate retrieval**
- **Candidate ranking**

Entity analysis

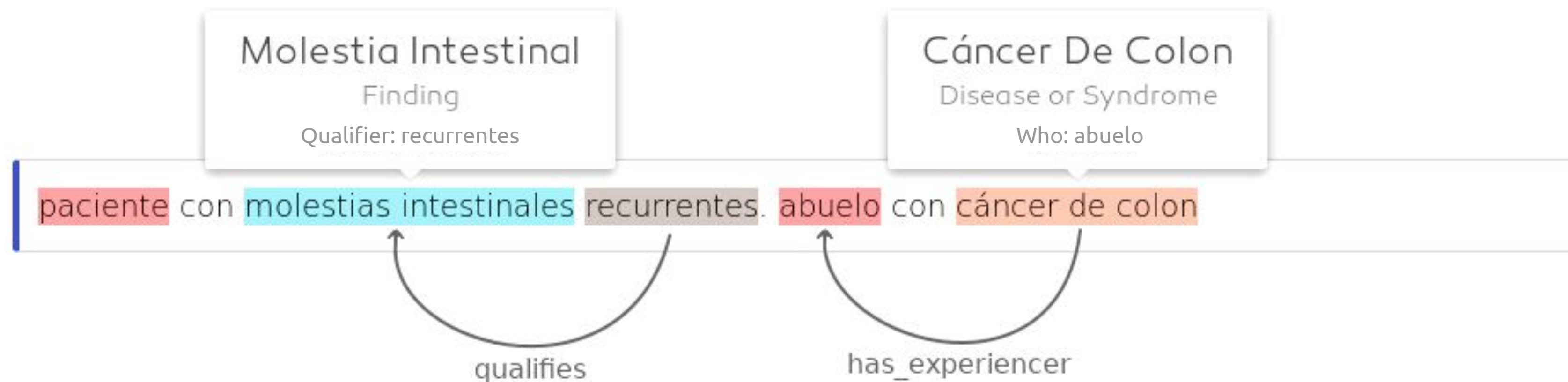
Antiinflamatorios
 Substance
 Negative ("no")

e visita urgencias debido a antiinflamatorios.

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- Experiencer
 - Negation
 - Certainty
 - Temporality
- [...]

Relationship Extraction



Usage of data

- Clinical practice.
 - Mostly EHR data
- **Clinical research** → with a QA process
- Predictive analytics.
 - Mostly administrative / claim data

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Focus on delivery

Desired datapoint extraction

	Precision	Recal	F1
<i>Rule-based system</i>	80.34%	57.58%	67.08%
<i>ML model</i>	89.45%	86.75%	88.08%
<i>Transfer learning model</i>	94.31%	92.85%	93.574%



Bringing Intelligence to Clinical Research

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Privacy first

Data stays within each facility with a common standard data model.

