



Clinical Text Mining for Health Care Managers using aggregated data in the Cloud

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Hospital intelligence

- Hospital managers
- Health care managers
- City councils
- Governmental organisations
- European organisations

Hospital acquired infections, HAI

- 10 percent of all in-patients obtains a HAI
- 3 million patients yearly in Europe
- 50 000 deaths

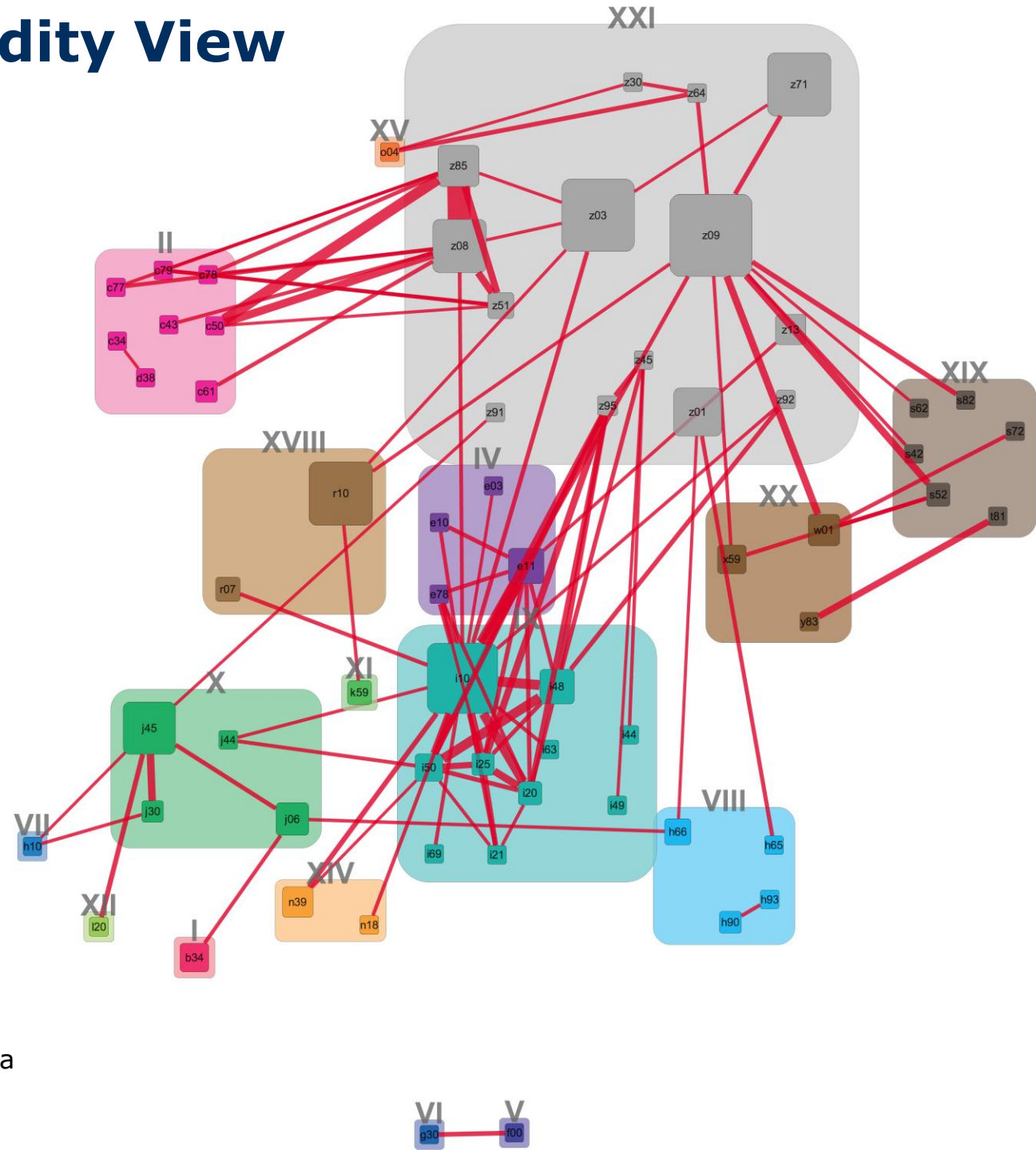
Information = clinical information

- 4-10 million pages of patient records are produced each year in Sweden (pop 10 million)
- The records contain both structured data (age, gender, admission date, time points, clinics) and unstructured data (free text, doctor notes, reasoning, etc)
- Very sensitive information

Stockholm EPR Corpus

- 600 000 patient records
- Year 2006-2010
- 500 clinics/units
- 23 000 users (readers and writers),
- 6-7 different professions
- Stockholm city council
- De-identified but still sensitive
- 600 million tokens

Comorbidity View



A Hospital Acquired Infection Case

- 123 H - IVA 322916614D 2007-08-21 9:12
1944 Woman Anamnesis
- Pneumonia, I110. Heart failure, unspecified, I509.
- An just admitted patient, gets at urine katheter, at some point she obtains fever, and a lab test is carried out on the urine and blood. She gets also antibiotics and gets better. The lab test on urine shows that she had bacteria in the urine. This is written in the patient records but also in the structured fields for temperature, drugs and lab results.

Detect-HAI using clinical text mining

- Detect-HAI system detects HAI
- Detect-HAI based on clinical text mining and machine learning techniques (Artificial Intelligence)
- 90 percent precision/recall
- Reports it to the cloud (non sensitive information: Age, clinic, time point, etc)

Patient records system and the Cloud

- Patient records are sensitive but not all parts
- Only 2 percent are sensitive
- 98 percent of the Patient records data can be stored and executed in the Cloud
- Patient record systems in Cloud for direct Hospital intelligence reporting
- Connect to all hospitals in Sweden, Europe