Visualizing Clinical Data of Patients at the Child and Adolescent Psychiatric Emergency Unit

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Background

- Child and Adolescent Psychiatry Unit (CAPE) only short-stay psychiatric ward in the province for 17 year old or younger patients
- Common presentation: suicidality, depression, psychosis
- Ongoing large multi-disciplinary project to collect data on patients and use for suicide prediction
We possess a manually created database covering around 333 patients.

Would like to visualize their data!

Vis would allow exploration to learn about our patients.

Little previous work looking at this!

**Users:** hospital managers, psychiatrists, researchers
Motivation/Who

Example Questions:

- Do our patients follow expected patterns of illness eg more depression in the fall, mania in the spring?
- Does suicidal ideation/attempts increase at stressful points during the school year?
- Is medication use consistent with evidence-based guidelines?
Motivation/Who

Important consideration:

• Current physician workflows incorporate very little technology, and very little vis
• Doctors are very scared of complicated Vis!
• Our Vis must be very simple, at least initially
**Items** = patients = 333

**Attributes** (Categorical, Ordinal, Quantitative)
- Demographics (gender, age, ethnicity, postal code)
- Date and reason for admission
- Medications and dose
- History:
  - Psychiatric history (diagnoses, previous admissions)
  - Medical history (diagnoses, surgeries)
  - Substance use history
  - Social history (family structure, foster care)
- Symptoms on admission
- Various clinical scale quantifying various symptoms
Data is hierarchical! E.g.

- **Diagnosis**
  - Psychotic Disorders
    - Schizophrenia
    - Brief Psychotic Episode
  - Depressive Disorders
    - Major Depressive Disorder
    - Persistent Depressive Disorder
  - Anxiety Disorders

- **Medications**
  - Antidepressants
    - Fluoxetine
    - Sertraline
  - Antipsychotics
  - Sedatives
  - Stimulants
Data also is also repeated for different time periods....

- **Diagnosis**
  - Diagnoses at admission
  - Diagnoses at discharge

- **Medications**
  - Medications in last 12 months
  - Medications on admission
  - Medications on discharge
• **Consume**
  • Discover- definitely!
  • Present – maybe?
  • Enjoy – no!
• **Produce**
  • Probably not yet, maybe in the future?
• **Search**
  • Explore/browse more than others, but likely all search tasks.
  • We won’t be visualizing individual patients, just varying subsets
• **Query**
  • Identify, and summarize will be important. Compare will be too, unsure whether we’ll need a specific compare function
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• Filtering + Compare will be a key features
• E.g. compare antidepressant medications of males vs females
• Users will likely not want to view all data at once
• Different users may have widely different use cases
Design Principles

• Must start as simple, not be intimidating, “not mathy”
• Must allow different use cases
• Must allow filtering/selection (both attributes and patients)
• Must be intuitive!