Identifying psychiatric patients‘ pathways of care by record linkage after pseudonymization: Linking inpatient and outpatient data for the total population of a province of Austria

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Routine health care information should inform policy, but ......

- Routine Information about the working of the health care system comes from event/episode statistics (e.g. number/rates of hospital discharges, average length of stay) – EUROSTAT, OECD, WHO-HFA

- Mostly hospital data, rarely outpatient and social service use data = distortion of the real pattern of service utilization
Figure 1: A General Model of a Reporting System of Mental Health Service Utilization Data

LEVEL 1: Services
- Hospitals (H)
- Out-patient Services (OP)
- Complementary Services (CS)

LEVEL 2: Provider
- Provider 1
- Provider 2
- Provider 3
- Provider 4
- Provider 5
- Provider 6
- Provider 7

LEVEL 3: Subnational/Regional
- Health Agency

LEVEL 4: National
- Ministry of Health
- Central Statistical Office
- Health Insurance

LEVEL 5: International
- EUROSTAT
- WHO

Katschnig et al 2007
Functional service types and responsible societal sector: 
Availability of data for monitoring service utilization

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<th>Societal sector/funding</th>
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Availability of data for monitoring service utilization by patients with mental disorders

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Routine health care information should inform policy, but ……

- Routine Information about the working of the health care system comes from event/episode statistics (e.g. number/rates of hospital discharges, average length of stay) – EUROSTAT, OECD, WHO-HFA
- Mostly hospital data, no outpatient and social service use data = distortion of the real pattern of service utilization
- No linked pathway data available > many questions cannot be answered, such as …..
Lack of routine information on

- Hospital readmissions (revolving door, failure of community psychiatry?)
- Referral patterns (motives for referral, e.g. cream skimming? Calculating costs for pathways of care and not only for episodes, contacts)
- Pathways to / out of care
- Continuity of care
- Heavy utilizers (e.g. in Austria 17% of patients account for 50% of psychiatric hospital days)
Collecting and allocating funds for health care in Austria

- Outpatient care paid on a flat rate basis per patient/per period (1mo, 3mo) plus fee for service
- In-patient care financed via a DRG system in each province (from a pool of funds)
Data on service use in Austria

- Collected for reimbursement purposes in a highly fragmented payment system
- Outpatient: 19 different insurance companies (mandatory, no choice of insurer)
  - Positive: Unique patient identifier
  - Negative:
    - Different semantics (e.g. what is a psychiatrist)
    - Different fee for service catalogues
- Inpatient: 9 different regional funds (one for each province)
  - Positive: data finally collected at the federal level
  - Negative: no unique patient identifier recorded
- Data on service utilization are located in many different databases some of which record a unique patient identifier some don't
Challenges for record linkage

- Ethical, if unique patient identifier is available
  > pseudonymisation
- Lack of unique patient identifier
  > probabilistic matching
- Different semantics in different databases
  > clearing house approach
- Large computer power needed
  > cooperation with large computer clusters
Study population

- All resident of the Austrian Federal State of Lower Austria (1,6 million inhabitants)
Study population

- All residents of the Austrian Federal State of Lower Austria (1.6 million inhabitants)
- Covered by obligatory health Insurance – 98% of the population are covered
- Age 19+
- First discharge from a psychiatric bed in 2006
Outcomes

• First health service utilization after discharge (\(=\) one step pathway)
• In five types of services (actually more: also pharmacy, ...)
  – Psychiatric bed
  – Non-psychiatric bed
  – Outpatient psychiatric service
  – Outpatient non-psychiatric specialized
  – General practitioner
• Within 12 months after discharge
• Problem: What to do with deaths during follow-up?
Probability of contacting five types of medical services within one year after first discharge from a psychiatric hospital 2006
N= 3.821 (for 1,256.856 aged 19+ years, Lower Austria)
Service utilization (SU) in the 12 months after hospital discharge (HD): Discharge from a psychiatric bed and readmission to a non-psychiatric bed

HD: Psychiatric bed
SU: Admission to non-psychiatric bed

n = 3821 (psy)
Service utilization (SU) in the 12 months after hospital discharge (HD): Discharge from a psychiatric bed and readmission to a psychiatric bed

- HD: Psychiatric bed
- SU: Admission to psychiatric bed

n = 3821 (psy)

Weeks since discharge
Discussion 1

• Methods
  – Record linkage is possible also in a very fragmented payment system
Discussion 2

High utilization of non-psychiatric services and GPs

– Possible explanations
  • Stigma avoidance?
  • Better geographical accessibility?
  • Physical comorbidity?
  • Misinterpretation of symptoms by patient?

– Potential Consequences
  • Psychiatric case registers are limited
  • Training of staff in non-psychiatric services
  • Calculating real costs of mental disorders
Outlook 1

– More specific analyses possible
  • More than one step
  • Differentiate by specific variables: gender, age, diagnosis
Outlook 2

– More specific analyses possible
  • More than one step
  • Differentiate by specific variables: gender, age, diagnosis

– Creating a tool for future continued monitoring of pathways – assess consequences of changing
  • Mental health policy
  • Payment system