

Investigating pathway patterns of patients with alcohol use disorders: A process mining approach

Jingxiang Zhang¹, Siyu Qian^{1,2}, Guoxin Su³, Chao Deng^{4,5}, David Reid², Barbara Sinclair², Ping Yu^{1,5}

¹Centre for Digital Transformation, School of Computing and Information Technology, University of Wollongong, Australia, ²Drug and Alcohol Service, Illawarra Shoalhaven Local Health District, Australia, ³School of Computing and Information Technology, University of Wollongong, Australia, ⁴School of Medical, Indigenous and Health Sciences, University of Wollongong, Australia, ⁵Illawarra Health and Medical Research Institute, Australia

Presenter's email: siyu.qian@health.nsw.gov.au

Introduction and aims: Process mining can be used to discover patient pathways and provide information for healthcare stakeholders to analyse and improve resource allocation and clinical outcomes. This study aimed to investigate pathway patterns of patients with alcohol use disorders who had interactions with a community-based Drug and Alcohol (D&A) Service.

Method: Data were obtained from a non-identifiable health databank - the Illawarra Health Information Platform. A total of 613 patients and their 14,126 interactions with the D&A Service (i.e., intake, assessment and occasion of service), 7,862 emergency department (ED) presentations and 4,079 inpatient admissions were extracted. These were organised into an event log for conducting process mining using the DISCO software.

Results: Of the 613 patients, 415 (67.7%) were male and 90 (14.7%) were polysubstance users. Of all the 14,126 D&A interactions, 1,096 (7.8%) were intake, 4,499 (31.8%) occurred with adult counselling service and 4,282 (30.3%) occurred with withdrawal management service. Compared with polysubstance users, non-polysubstance users had longer interactions with withdrawal management service (median duration 15 mins vs 12 mins, $p=0.044$) but shorter interactions with adult counselling service (median duration 30 mins vs 32.5 mins, $p=0.021$). Derived pathway patterns showed frequent bounces within and between D&A services, ED and inpatient admission. Compared with polysubstance users, non-polysubstance users were more likely to bounce from withdrawal management service to inpatient admission.

Discussions and Conclusions: Pathway patterns of patients with alcohol use disorders were discovered using process mining. Further research will investigate if inherent sequences exist in service usage.

Disclosure of Interest Statement: None to declare.