



Healthcare Resource Utilization and Cost of Treatment-Resistant Depression: A Six-Year Trend and Comparative Analysis in Hong Kong

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Background & Objectives

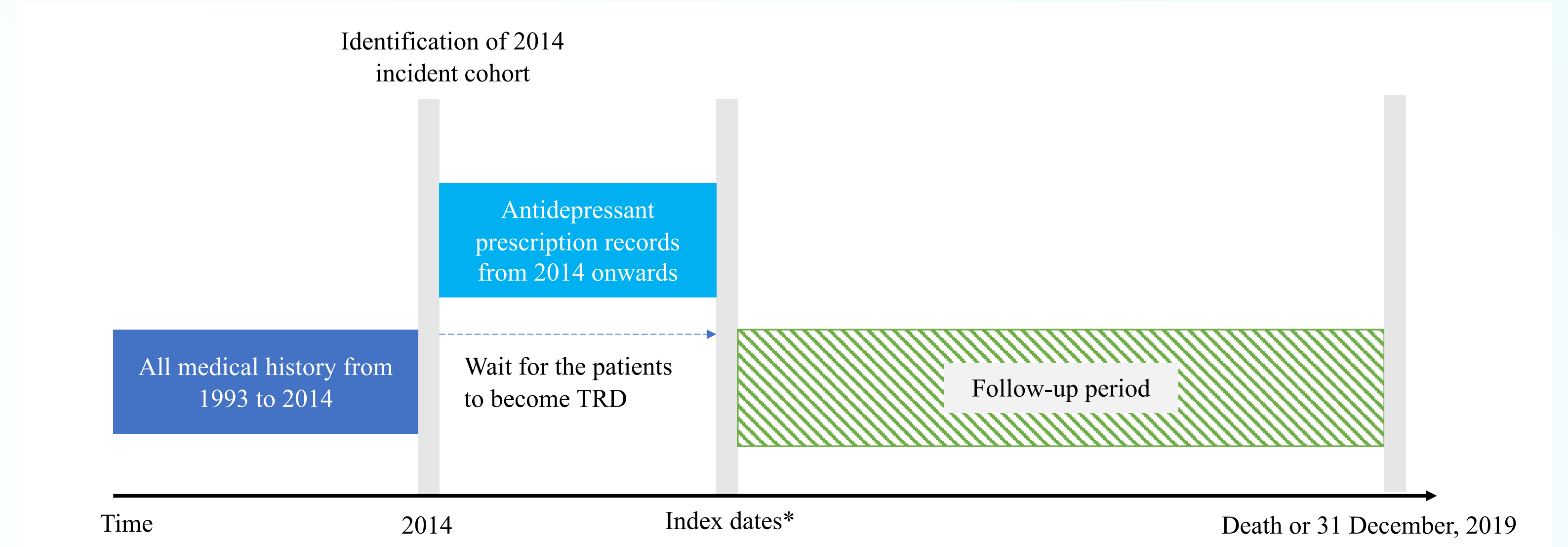
Despite available care, up to half of patients with depression fail to reach remission and are known as treatment-resistant depression (TRD). Previous studies demonstrated that TRD had higher risk of mortality, productivity losses, employment changes and healthcare resource utilisation (HRU) compared with treatment responsive depression.

Although literature discussed the economic impact of TRD, long-term burden beyond 12 to 24 months was rarely reported. However, the chronicity and recurrent disease nature necessitates longer follow-up to capture the ongoing economic burden along disease journey. Currently, the temporal pattern of HRU and associated cost is uncertain, and there is a dearth of economic studies further stratifying their outcomes based on service subtypes.

In this study, we assessed 1) the six-year trend of annualized all-cause HRU and cumulative medical costs, 2) the all-cause HRU in 14 service subtypes and 3) the overall medical cost, between TRD and non-TRD patients.

Methods

This was a population-based retrospective cohort study using the territory-wide electronic medical records from the public healthcare sector in Hong Kong.



We followed up 8223 incident depression patients diagnosed in 2014 from the first diagnosis to death or December 2019. Next, we defined the TRD status, which was having taken at least two antidepressant regimens for a defined duration and a third regimen to confirm previous treatment failures. Then, We matched the TRD cohort 1:4 to the non-TRD cohort on propensity scores estimated by age, sex and medical history before depression diagnoses. Index dates were the prescription dates of the third regimen for TRD group, whilst the same index dates were assigned for the matched non-TRD control.

Post-matching characteristics	TRD group (N = 1,479)	Non-TRD group (N = 5,856)	SMD
Age (mean, SD)	46.6 (17.0)	47.1 (17.9)	0.032
Female (N, %)	1093 (73.9)	4306 (73.5)	0.008
History of any psychiatric conditions (N, %)	218 (14.7)	856 (14.6)	0.003
History of any physical disorders (N, %)	288 (19.5)	1158 (19.8)	0.008
Charlson Comorbidity Index (mean, SD)	1.16 (1.81)	1.27 (1.94)	0.059

SMD – Standardized mean difference.

We then aggregated the costs from attendance and admission records in 14 service types by multiplying unit costs valued at 2019 Hong Kong Dollars. We examined the annual and cumulative trend of HRU and cost over six years using relative changes and cumulative annual growth rates (CAGR), then performed negative binomial regression to compare mean HRU and cost by year, by service type and at an overall level.

Results

Both TRD (18.1%) and non-TRD patients had decreasing HRU across six years, with strongest relative decline (28-55%) within the first two years, then slow decline in subsequent years. Outpatient setting contributed ≥85% of service utilization but hospitalization accounted for ≥72% of costs owing to prolonged stay and high unit costs.

Cumulative costs rose steadily with CAGRs of 23.4% (TRD: 27.5%; non-TRD: 21.9%).



TRD was associated with greater HRU across settings and years (p<0.001) and imposed 54% higher overall cost per patient year [\$116,731 vs \$75,666, adjusted odds ratio: 1.80 (95%CI: 1.63-2.00)]. Patients with TRD also used more both psychiatric and non-psychiatric resources.

	TRD patients	Non-TRD patients	Adjusted OR (95% CI)	p-value
Inpatient setting (bed-day per PY)				
General and rehabilitation ward	5.95 (30.2)	3.38 (20.3)	1.668 (1.397-2.003)	<0.001*
Psychiatric ward	2.25 (14.8)	0.712 (7.7)	2.829 (1.692-4.997)	<0.001*
High dependency and ICU ward	0.047 (0.938)	0.102 (3.06)	0.372 (0.158-1.000)	0.019*
All ward types	8.25 (33.7)	4.19 (22.7)	1.857 (1.560-2.222)	<0.001*
Emergency setting (episodes per PY)				
Accident & Emergency	1.06 (3.74)	0.648 (1.39)	1.418 (1.297-1.552)	<0.001*
Outpatient setting (episodes per PY)				
Specialist services				
Outpatient clinic, psychiatric	5.00 (7.42)	1.95 (3.19)	2.356 (2.199-2.527)	<0.001*
Outpatient clinic, non-psychiatric	2.60 (3.39)	1.96 (3.01)	1.327 (1.207-1.461)	<0.001*
Allied health clinic	2.41 (4.97)	1.29 (3.97)	1.857 (1.650-2.095)	<0.001*
General services				
Outpatient clinic	2.33 (4.89)	1.90 (3.64)	1.237 (1.107-1.385)	<0.001*
Day hospital				
Psychiatric day hospital	0.749 (7.97)	0.250 (4.50)	3.100 (1.398-7.919)	0.009*
Geriatric day hospital	0.064 (0.728)	0.068 (0.914)	0.931 (0.383-2.675)	0.883
Rehabilitation day hospital	0.070 (1.410)	0.017 (0.454)	5.664 (1.364-38.955)	0.026
Community services				
Nursing, general	0.287 (2.03)	0.217 (1.88)	1.210 (0.658-2.401)	0.557
Nursing, psychiatric	1.48 (3.27)	0.52 (1.86)	2.833 (2.248-3.607)	<0.001*
Allied health	0.102 (1.10)	0.033 (0.346)	2.457 (1.520-4.104)	<0.001*
Overall services				
All outpatient types	15.1 (15.7)	8.21 (10.6)	1.792 (1.683-1.909)	<0.001*

Conclusion

We highlight the chronicity and immense burden associated with TRD, and urge for effective management beyond available care to relieve long-term economic burden.