

Comparison and policy implications of ambulance duration and associated costs for suicidal presentations versus general presentations in Australia

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BACKGROUND

- Suicidal behaviour is a major public health issue, often requiring attendance by first responders (i.e. paramedics and police).¹
- Societal costs have been estimated for suicide attempt and completed suicide^{2,3}, however no studies have estimated first responder costs associated with suicidal behaviours more broadly, including suicide ideation and self-harm threat.

OBJECTIVE

This study aimed to compare first responder resource use and costs associated with suicidal behaviour ambulance presentations (including suicide attempt, suicide ideation, self-harm threat and self-harm injury) to general non-mental health ambulance presentations.

METHOD

- Number of ambulance presentations and duration of presentations were obtained from the 2022 Victorian arm of the National Ambulance Surveillance System (suicide and self-harm presentations) and the general Ambulance Victoria dataset (non mental health presentations).⁴
- Mean ambulance duration and total first responder costs were calculated and included personnel costs for police and paramedic and non-personnel costs such as vehicle, travel, consumables.
- Personal cost for paramedic and police were calculated by multiplying the duration of the ambulance presentation in hours by the hourly wage.^{5,6}
- Non-personnel costs were calculated by subtracting the specific personnel costs from the total cost of a Victorian ambulance⁷ or police presentation. These costs were adjusted for ambulance presentation length to account for the ambulance being used for another role.
- Sensitivity analyses were conducted, in which the non-personnel costs were unadjusted.



RESULTS

- The mean duration and costs for individuals who were transported to hospital was 144 minutes for suicide behaviour related presentations (cost=\$AUD 1,717), which was similar in duration (146 minutes), yet significantly costlier compared to general physical ambulance presentations (cost=\$AUD 1,530).
- Police mean personnel costs were \$AUD 120 for suicide related ambulance presentations and \$AUD 4 for general physical presentations.
- Within the suicide behaviour cohort, suicide attempt (\$AUD 1,729), suicide ideation (\$AUD 1,704), self-harm threat (\$AUD 1,715) and self-harm injury (\$AUD 1,743) had similar first responder costs.

Table 1: Mean costs for ambulance dispatch to time of ED admission

	Mean paramedic personnel costs 2022 AUD (95% CI)	Mean non-personnel ambulance costs 2022 AUD (95% CI)	Mean police personnel costs 2022 AUD (95% CI)	Mean non-personnel police costs 2022 AUD (95% CI)	Mean total personnel costs (paramedic and police) 2022 AUD (95% CI)	Mean total non-personnel costs (paramedic and police) 2022 AUD (95% CI)	Total mean costs (paramedic and police) 2022 AUD (95% CI)
Suicide and self-harm presentation, n=21,128	207 (205, 208)*	1,292 (1291, 1293)*	118 (117, 120)*	101 (98, 102)*	325 (322, 327)*	1,392 (1389, 1396)*	1,717 (1711, 1723)*
Suicide attempt, n=7,986	210 (208, 212)	1,313 (1312, 1315)	103 (101, 106)*	102 (100, 104)*	314 (310, 318)*	1,415 (1412, 1419)*	1,729 (1722, 1736)*
Self-injury, n=3,637	207 (205, 210)*	1,297 (1296, 1299)*	138 (134, 141)*	101 (99, 103)*	345 (339, 351)*	1,398 (1395, 1401)*	1,743 (1734, 1752)*
Suicide ideation, n=10,502	204 (202, 206)*	1,275 (1274, 1277)*	125 (123, 128)*	100 (97, 101)*	329 (326, 333)*	1,375 (1372, 1378)*	1,704 (1697, 1711)*
Self-injury threat, n=533	204 (197, 211)*	1,275 (1274, 1277)*	136 (126, 146)*	100 (97, 101)*	340 (325, 356)*	1,375 (1372, 1378)*	1,715 (1696, 1734)*
Other presentation, n=286,959	211 (209, 212)	1,313 (1312, 1315)	3.5 (3.2, 3.7)	3 (2.8, 3.2)	214 (213, 216)	1,316 (1316, 1316)	1,530 (1529, 1532)

*Statistically significant differences between suicide/self-harm presentations and general physical health presentations at p<0.05

CONCLUSION

- Suicidal behaviour ambulance presentations were similar in length, but significantly costlier compared to general health ambulance presentations, with the major contributor of increased costs being police co-attendance.
- High costs associated with suicide ideation and self-harm threat, due to their almost universal transport to hospital, emphasise the need for alternative and more efficient models of care for these presentations.
- Increased efficiency could occur via alternate pathways for mental health crisis events such as specific mental health ambulances and police and paramedic combined response teams.

[1] Black Dog Institute. Care After a Suicide Attempt. Sydney: Black Dog Institute; 2020 April 2020 [2] Kinchin I, Doran CM. The Economic Cost of Suicide and Non-Fatal Suicide Behavior in the Australian Workforce and the Potential Impact of a Workplace Suicide Prevention Strategy. Int J Environ Res Public Health. 2017;14(4). [3] KMPG. Investing to Save: The Economic Benefits for Australia of Investment in Mental Health Reform. Melbourne; 2018. [4] Lubman DI, Heilbronn C, Ogeil RP, Killian JJ, Matthews S, Smith K, et al. National Ambulance Surveillance System: A novel method using coded Australian ambulance clinical records to monitor self-harm and mental health-related morbidity. PLoS One. 2020;15(7):e0236344. [5] Ambulance Victoria. Ambulance Victoria Enterprise Agreement 2020 Victoria: Ambulance Victoria; 2020 [Available from: <https://www.aeavic.org.au/wp-content/uploads/2022/05/2020-AV-Operational-Enterprise-Agreement.pdf>]. [6] Australian Federal Police. Determination of Australian Federal Police (Non-SES Employment) Increases to Salary and Specified Allowances Canberra: AFP; 2023 [Available from: <https://www.afp.gov.au/sites/default/files/PDF/Det1of2023-10052023.pdf>]. [7] Department of Health and Aged Care. Ambulance Fees Melbourne2022 [Available from: <https://www.health.vic.gov.au/patient-care/ambulance-fees>]