

# Fewer orbital fractures treated at St Vincent's Hospital after lockout laws introduced in Sydney

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**O**rbit fractures are common in men, accounting for 27% of eye-related hospitalisations; assault is the main mechanism of injury.<sup>1</sup> They are a serious cause of morbidity, including loss of vision.<sup>2</sup>

"Lockout laws" for inner Sydney, effective from 24 February 2014, prohibit operators admitting patrons to licensed premises after 1:30 am or serving alcohol after 3:00 am. The laws were aimed at reducing the number of violent alcohol-related injuries, and the incidence of general alcohol-related injuries was significantly lower one year after their introduction.<sup>3</sup>

We reviewed the incidence of orbital fractures treated at St Vincent's Hospital, the primary tertiary referral hospital in the lockout law zone, from 2 years before to 2 years after the laws were introduced (24 February 2012 – 23 February 2016). Cases were identified by recorded International Classification of Diseases (ICD-10) codes for orbital fractures (online *Appendix*). Data on the age and sex of the patient, length of hospital stay, and fracture management plan were extracted and compared in a pre–post analysis. We classified fractures as drug- or alcohol-related if blood alcohol levels exceeded 0.10 g/100 mL, if a positive result from a urine drug screen was recorded, or if the relevance of drugs or alcohol was clinically documented. Fractures were classified as violence-related if an alleged assault was clinically documented. Cost savings to the health system were estimated, based on 2014–15 Australian refined diagnosis-related group cost weights<sup>4</sup> and ambulance fees for transport to St Vincent's Hospital (further details on cost estimates: online *Appendix*).

A total of 351 computed tomography-confirmed orbital fractures were recorded during the 4-year period: 196 during the 2 years prior to the laws and 155 during the subsequent 2 years. The number of violence-related fractures was 10% lower (95% confidence interval [CI], 0.2–21%) during the second period ( $P = 0.036$ ); that of drug- or alcohol-related fractures was 7% lower (95% CI, -3% to 18%;  $P = 0.15$ ) (*Box*). The indications for operative management of orbital fractures, which requires overnight admission, include enophthalmos, diplopia, muscle entrapment and cosmetic deformity.<sup>5</sup> Twenty-seven fewer fractures required surgical management during the period of the laws ( $P = 0.021$ ); the cost savings associated with this reduction were estimated to be \$391 286 for hospital costs and \$4946 for ambulance costs. A further \$67 460 was saved because 14 fewer cases of orbital fracture were conservatively managed during the 2 years of the lockout laws, yielding an estimated total saving of \$463 692.

## Demographic characteristics of patients and clinical characteristics of their orbital fracture injuries, during the two years before and the first two years after the introduction of the Sydney lockout laws

Characteristic	Prior to period of lockout laws	During period of lockout laws	P
Number of patients	196	155	
Sex (men)	147 (75%)	113 (73%)	0.70
Age (years), mean (SD)	48.9 (21.4)	49.4 (22.7)	0.22
Management of injury			0.021
Operative	54 (28%)	27 (17%)	
Conservative	141 (72%)	128 (83%)	
Drugs or alcohol involved	84* (43%)	55† (36%)	0.15
Violence involved	81 (41%)	47† (31%)	0.036

SD = standard deviation. \* Data missing for two patients. † Data missing for one patient. ♦

In the first pre–post analysis of the incidence of orbital fractures around the time of the introduction of the controversial lockout laws, we found that the number of fractures associated with alleged violence or assault was statistically significantly lower during the period covered by the laws, and that fewer fractures required operative management. Most cost savings (85%) were associated with the reduced need for surgical treatment.

Our study is limited by our reliance on clinical documentation for identifying violence as a factor in injuries. Recording errors would have been few, as the St Vincent's Hospital staff are highly conscious of the importance of documenting the involvement of drugs, alcohol and violence in injuries. We have no information about whether presentations of orbital fractures and their associated costs have increased at hospitals outside the lockout law zone since February 2014.

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<sup>4</sup> Independent Hospital Pricing Authority. National Hospital Cost Data Collection, public hospitals cost report, round 19 (financial year 2014–15),

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